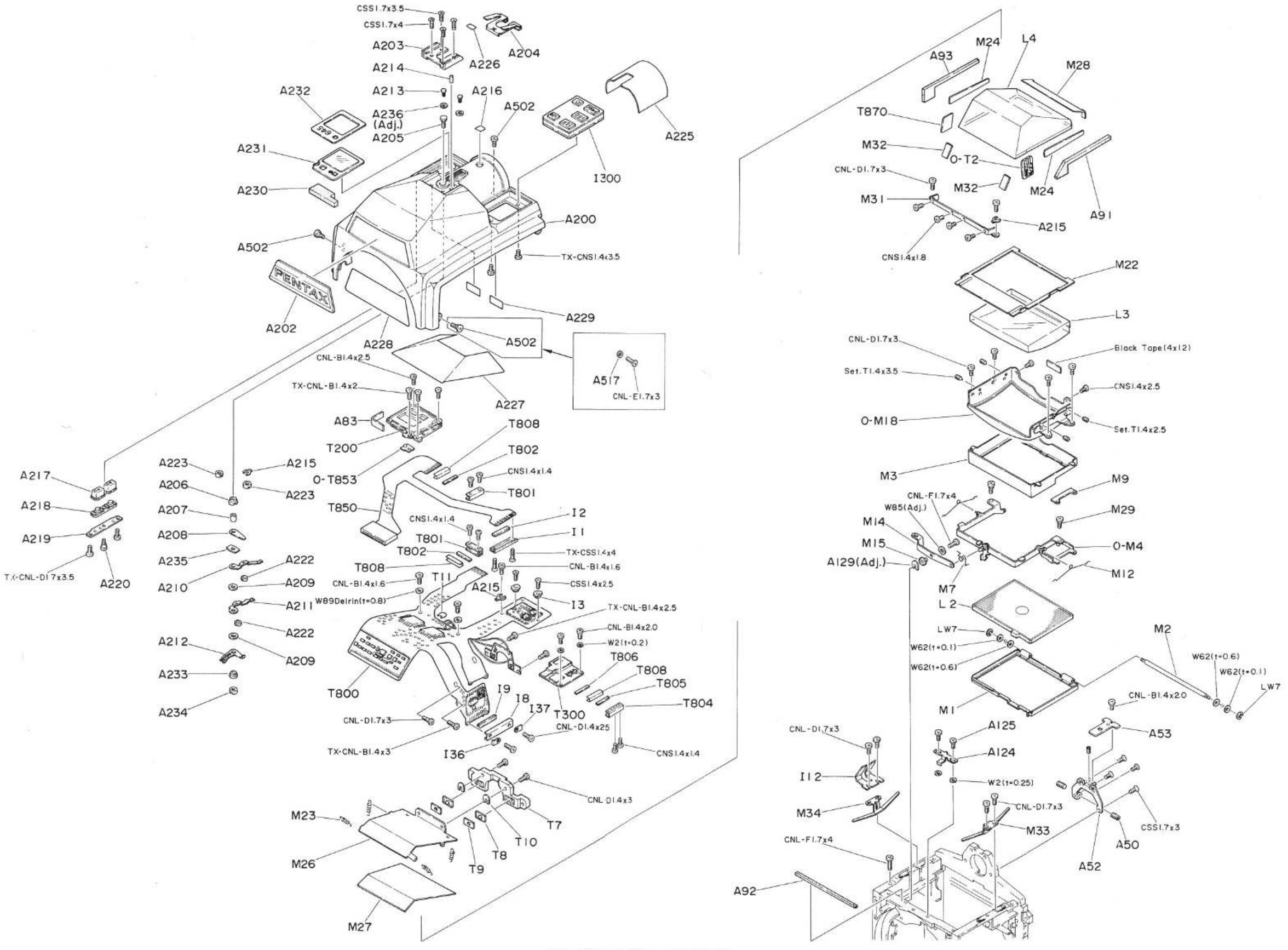
PRODUCT No.24400

PENTAX 645

EXPLODED ILLUSTRATION



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EXPLODED ILLUSTRATION

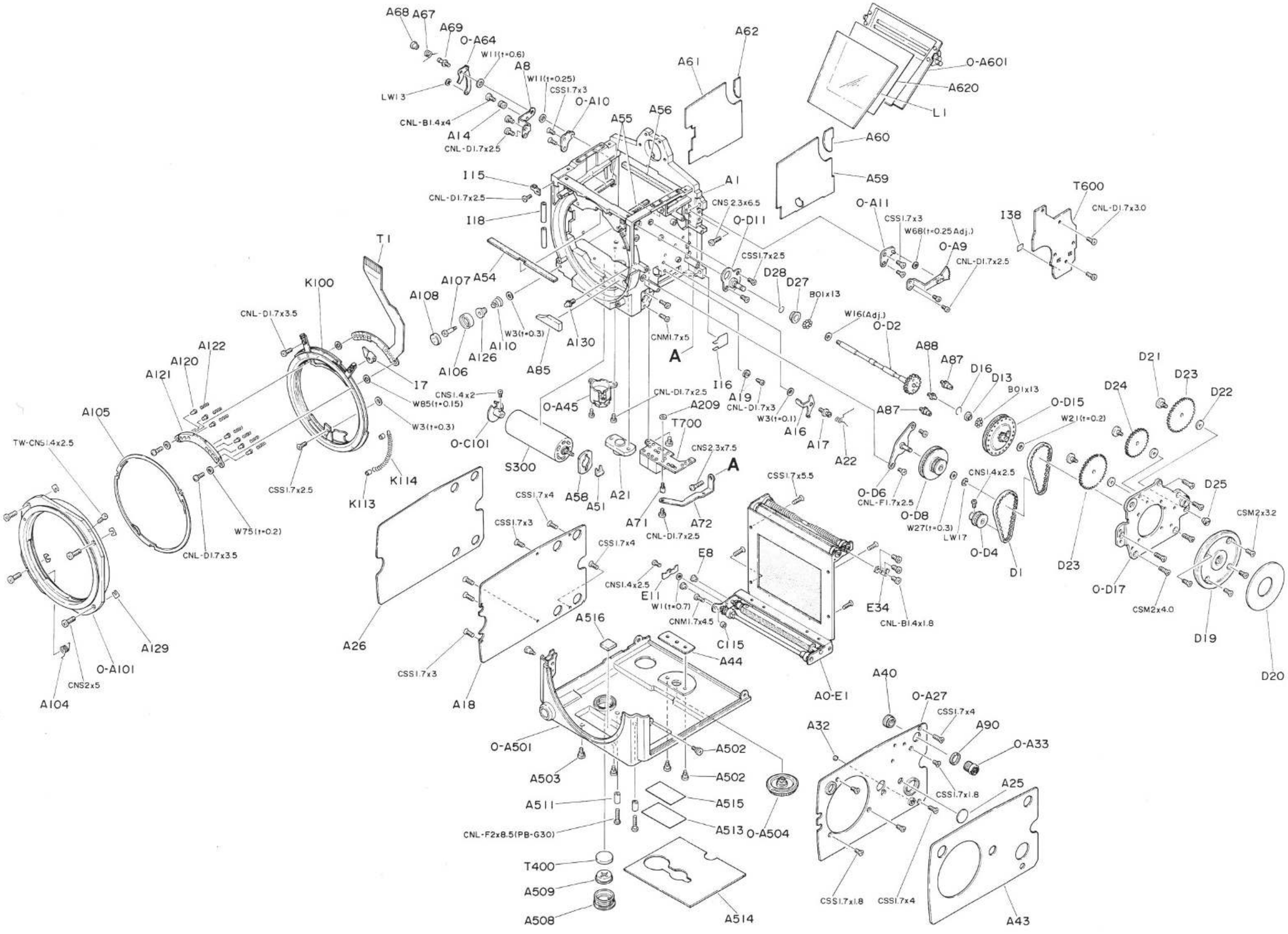

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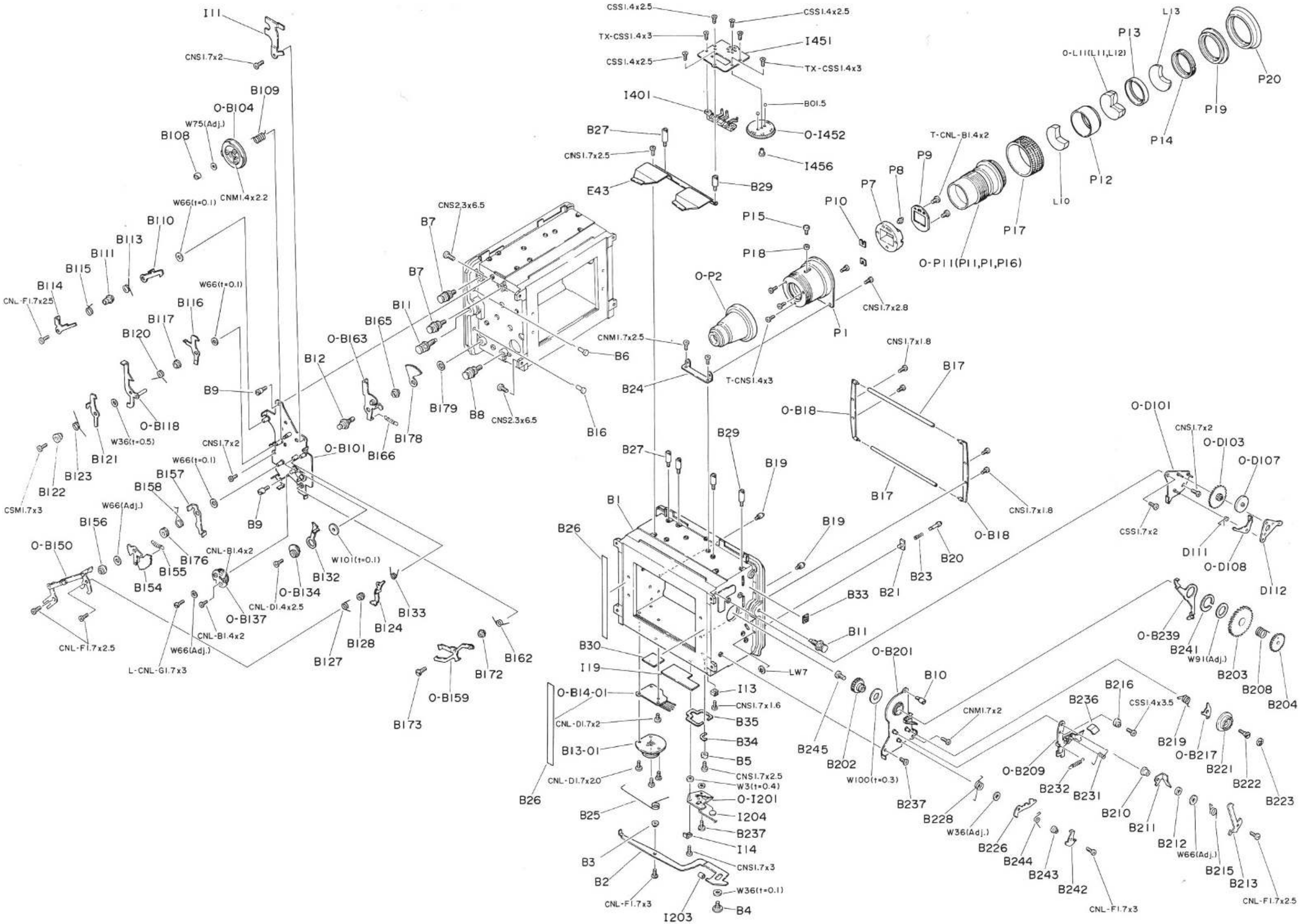
Fig. 2

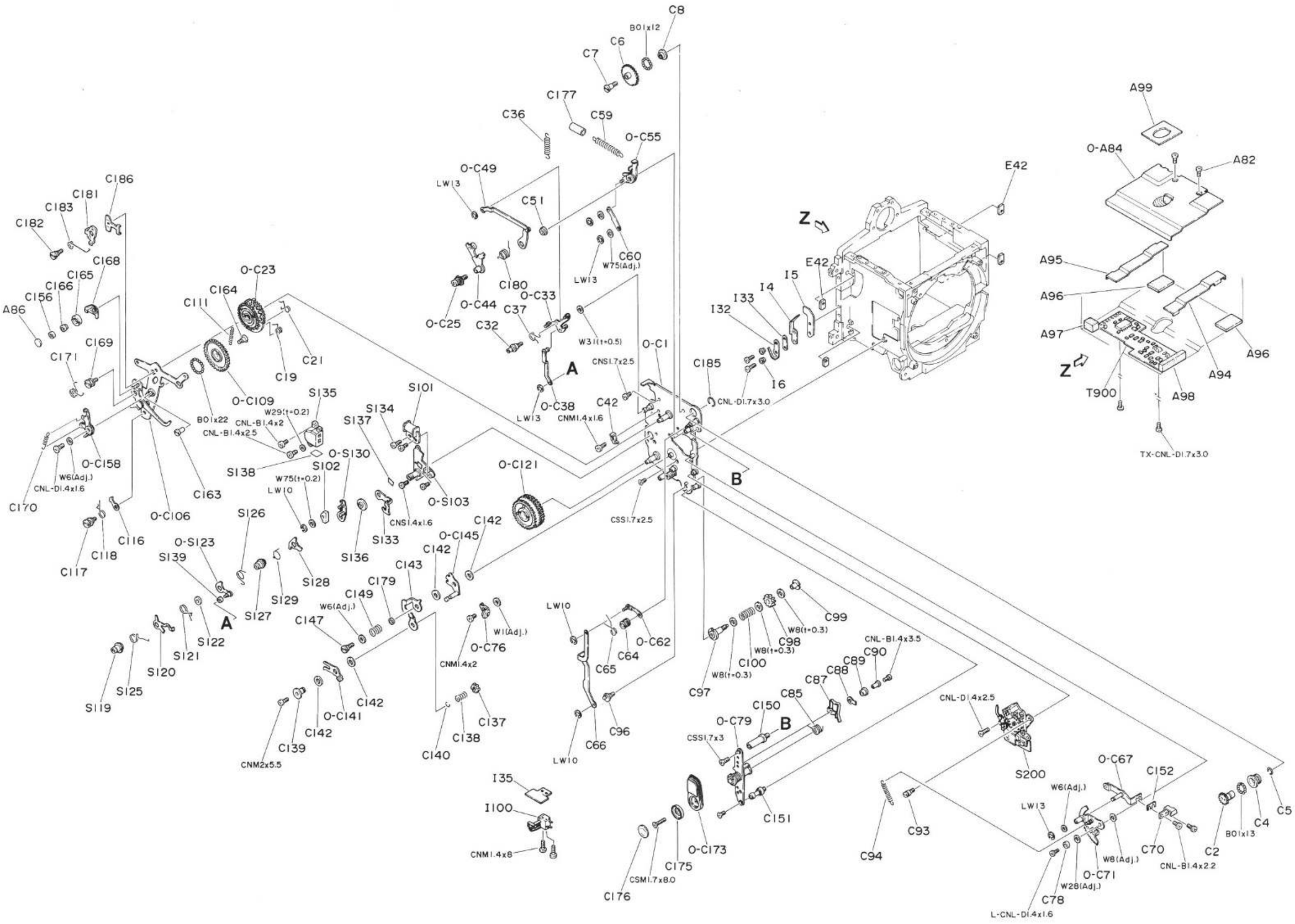
EXPLODED ILLUSTRATION



Product No.24400

PENTAX 545

EXPLODED ILLUSTRATION

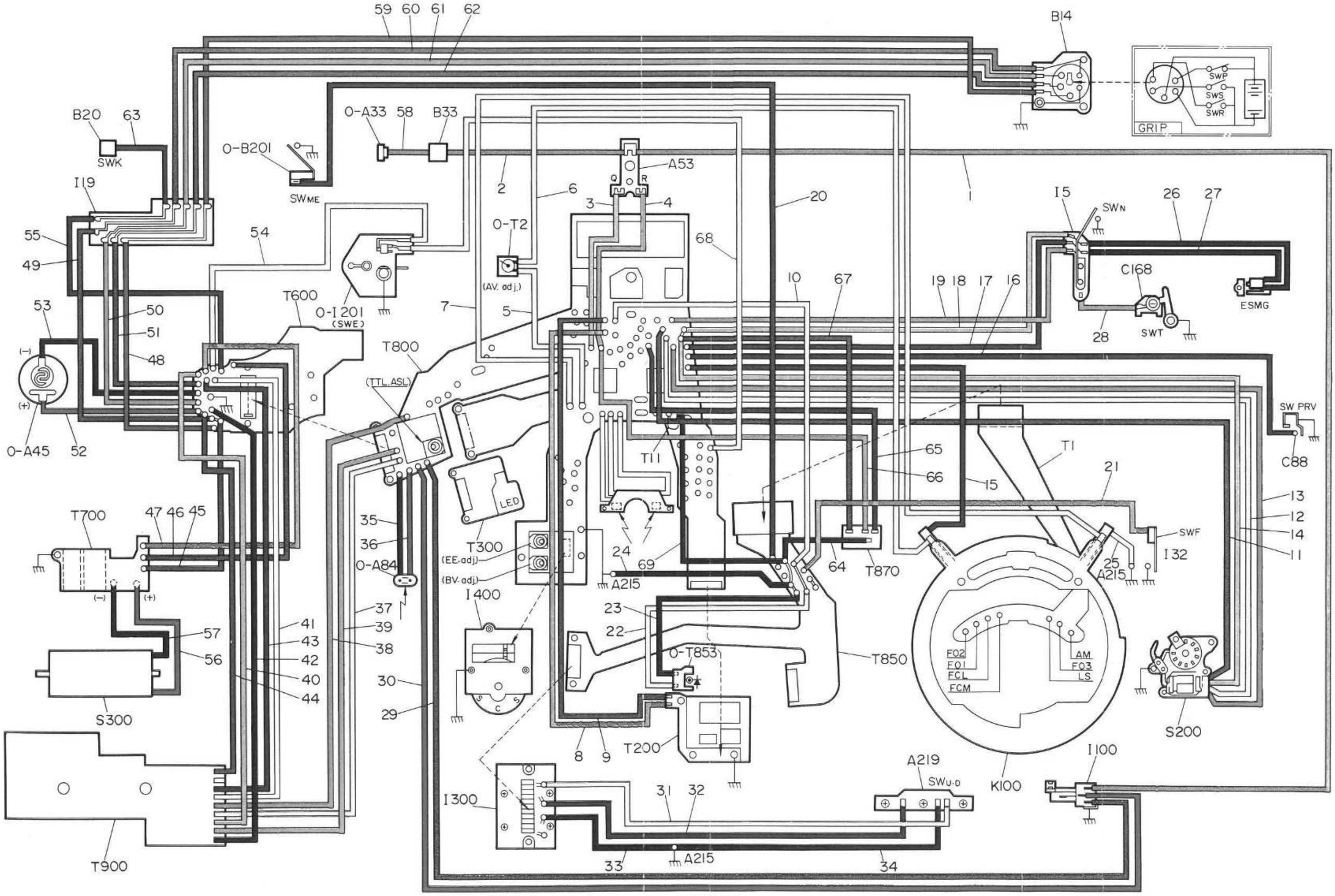


Product No.24400

PENTAX 645

Fig. 1

DISTRIBUTING WIRES



Product No.24400

PENTAX 645

Fig. 5

LIST OF SERVICE PARTS

Product No.24400

PENTAX 645

Note: 1. The parts with numbers starting '0-' are assemblies.

2. Only available parts are listed below.

Parts No.	Description	Quantity	Interchangeability
A8	Mirror arm, right	1	
0-A9	Mirror arm, left assy. (A9, A15)	1	
0-A10	Mirror arm shaft, right assy. (A10, A12)	1	
0-A11	Mirror arm shaft, left assy. (A11, A13)	1	
A14-00A	Mirror flip-up collar A (D=3.5)	1	
-00B	" B (D=3.2)		
A16	Dumper plate	1	
A17	Dumper plate shaft	1	
A18	Cover plate, right	1	
A19	Adjusting collar	1	
A21	Tripod seat	1	
A22	Dumper plate spring	1	
A23-00A	Spacer A (t=0.4)	1	
-00B	" B (t=0.5)		
-00C	" C (t=0.6)		
-00D	" D (t=0.7)		
-00E	" E (t=0.8)		
A25	Cover	1	
A26	Body covering, right	1	

Parts No.	Description	Quantity	Interchangeability
0-A27	Cover plate, left assy. (A27, A28, A30, A31, A32)	1	
A32	Window	1	
0-A33	X-terminal assy. (A33, A34, A35, A39)	1	24001-0-A117
A40	X-terminal retainer nut	1	
A43	Body covering, left	1	
0-A45	Battery case assy. (A45, A46, A47)	1	
A50	Hexagon screw	3	
A51-00A	Motor adjusting washer A (t=0.05)	1	
-00B	" B (t=0.08)		
-00C	" C (t=0.1)		
-00D	" D (t=0.15)		
A52	Accessory shoe installing plate	1	
A53	X-synch. relay P. C. board	1	
A54	Light seal, front	1	
A55	Light seal, side	2	
A56	Light seal, rear	1	
A58	Motor spacer	1	
A59	Flare prevention sheet, left	1	
A60	Flare prevention sheet, left (small)	1	
A61	Flare prevention sheet, right	1	
A62	Flare prevention sheet, right (small)	1	
0-A64	Mirror actuating lever assy. (A64, A65, A66)	1	
A67	Mirror restitution spring	1	

Parts No.	Description	Quantity	Interchangeability
A68	Mirror restitution spring shaft	1	
A69	Mirror actuating lever retainer screw	1	
A71	Relay block retainer screw	1	
A72	Shutter block retainer plate	1	
A82	Cell cover retainer screw	2	
A83	Light seal tape	1	
0-A84	Cell frame assy. (A84, A81, T5, T6, L15, L16)	1	
A85	Spacer	1	
A86	Dust prevention sheet	1	
A87	Connector column	2	
A88	P. C. board supporting column	1	
A90	X-terminal ring	1	
A91	Dust prevention seal, left	1	
A92	Dust prevention seal, front	1	
A93	Dust prevention seal, right	1	
A94	Cell cover bottom plate, right	1	
A95	Cell cover bottom plate, left	1	
A96	Packing A	2	
A97	Packing B	1	
A98	Packing C	1	
A99	Cell frame cover	1	
0-A101	Mount assy. (A101, A102, A103, W93)	1	

Parts No.	Description	Quantity	Interchangeability
A104	Lock lever spring	1	
A105	Mount spring	1	
A106	Lens release button	1	
A107	Lens release button shaft	1	
A108	Lens release button cover	1	
A110	Lens release button restitution spring	1	
A120	Connector pin	7	
A121	Connector pin holder	1	
A122	Connector pin spring	7	
A124	Focusing screen release lever	1	
A125	Release lever retainer screw	2	
A126	Lens release button seat	1	
A129-00A	Adjusting washer A (t=0.02)	9	
-00B	" B (t=0.03)		
-00C	" C (t=0.05)		
-00D	" D (t=0.08)		
-00E	" E (t=0.1)		
-00F	" F (t=0.15)		
-00G	" G (t=0.2)		
-00H	" H (t=0.25)		
-00I	" I (t=0.3)		
A130	AV VR stopper	1	
A200	Top cover assy. (A201, A202, A203, A205, A206, A207, A208, A209 x2, A210, A211, A212, A213 x2, A214, A215, A217, A218, A219, A220, A222 x2, A223, A226, A227, A228, A229 x2, A230, A231, A232, A233, A234, A235, A236 x2)	1	

Parts No.	Description	Quantity	Interchangeability
A202	Nameplate	1	
A203	Accessory shoe	1	65607-Y33
A204	Accessory shoe spring	1	65607-Y34
A205	X-contact	1	
A206	X-contact retainer nut	1	
A207	Insulation collar	1	
A208	Contact piece A	1	
A209	Insulation washer	3	
A210	Contact piece B	1	
A211	Contact piece C	1	
A212	Contact piece D	1	
A213	Signal contact	2	
A214	SW pin	1	
A215	Lug plate	3	
A216	Cover plate	1	
A217	Control button	2	
A218	Control switch	1	
A219	Control switch board	1	
A220	Control switch board retainer screw	1	
A222	Contact piece retainer nut	2	
A223	Accessory shoe retainer nut	2	
A225	Top cover covering	1	
A226	Indication plate	1	24500-A332

Parts No.	Description	Quantity	Interchangeability
A227	Insulation sheet A	1	
A228	Insulation sheet B	1	
A229	Insulation sheet C	2	
A230	Light seal	1	
A231	LCD display window	1	
A232	Ornament plate	1	
A233	Insulation collar	1	
A234	X-contact piece retainer nut	1	
A235	Insulation plate	1	
0-A501	Bottom cover assy. (A501, A510, A512)	1	
A502	Cover retainer screw A	7	
A503	Cover retainer screw B	2	
0-A504	Film winding knob assy. (A504, A505, A506, A507)	1	
A508	Battery cap	1	
A509	Battery cap cover	1	
A511	Cover retainer screw collar	2	
A513	Serial number plate	1	
A514	Scratch protection sheet	1	
A515	Adhesive tape	1	
A516	Motor retainer	1	
A517-00A	Adjusting collar A (D=2.3)	4	
-00B	" B (D=2.4)		
-00C	" C (D=2.5)		

Parts No.	Description	Quantity	Interchangeability
0-A601	Mirror seat assy. (A601, A602, A603 x4, A604 x2, A608, A609 x2)	1	
A620	Mirror adhesive tape	1	
B1	Film chamber	1	
B2	Wind completion switch lever	1	
B3	Switch lever axis	1	
B4	Switch lever holding screw	1	
B5	Switch adjusting cam	1	
B6	Film holder detecting pin	1	
B7	Grip pin A	2	
B8	Grip pin B	1	
B9	Film advance control seat retainer screw	2	
B10	Film winding seat retainer screw	1	
B11	Strap lug	2	
B12	Grip pin C	1	
B13-01	Grip connecting socket	1	
0-B14-01	Grip connecting board assy. (B14-01, B15-01 x5)	1	
B16	Film holder detecting pin B	1	
B17	Film roller	2	
0-B18	Film roller spring assy. (B18, B28)	2	
B19	Film holder guide screw	2	
B20	Film detecting pin	1	

Parts No.	Description	Quantity	Interchangeability
B21	Film detecting pin collar	1	
B23	Film detecting pin spring	1	
B24	Eyepiece installing plate	1	
B25	Wind completion switch lever spring	1	
B26	Scratch prevention sheet	2	
B27	LCD circuit unit installing screw	3	
B29	C-S selecting seat installing screw	3	
B30	Connector insulation sheet	1	
B32	Film advance control seat retainer screw B	1	
B33	Relay P.C. board	1	
B34-00A -00B	Insulation sheet A (t=0.8) " B (t=0.6)	1	
B35	Dust prevention seal	1	
0-B101	Film advance control seat assy. (B101, B106, B112 x3, B131, B136, B144, B145, B147, B148, B149, B161)	1	
0-B104	Counter cam assy. (B104, B102, B103, B105, B107, CNM1.4x2.2 x3)	1	
B108	Counter cam shaft nut	3	
B109	Counter cam restitution spring	1	
B110	Hook claw A	1	
B111	Release lever A collar	1	
B113	Hook claw spring	1	
B114	Release lever A	1	

Parts No.	Description	Quantity	Interchangeability
B115	Release lever A spring	1	
B116	Hook claw B	1	
B117	220 lever collar	1	
0-B118	220 lever assy. (B118, B119)	1	
B120	220 lever spring	1	
B121	120 lever	1	
B122	120 lever collar	1	
B123	120 lever spring	1	
B124	Count starting lever	1	
B127	Count starting lever spring	1	
B128	Count starting lever collar	1	
B132	Transporting claw	1	
B133	Transporting claw spring	1	
0-B134	Transporting cam assy. (B134, B135)	1	
0-B137	Film advance restriction cam gear assy. (B137, B138, B139, B140, B141, B142, CNL-B1.4x2 x2)	1	
0-B150	Connecting lever assy. (B150, B129, B130, B151, B152, B153, B225)	1	
B154	Positioning sector gear	1	
B155	Sector gear spring	1	
B156	Sector gear collar	1	
B157	Film winding hold lever	1	

Parts No.	Description	Quantity	Interchangeability
C4	Ball bearing exterior tube	1	
C5	C spring	1	
C6	2nd winding gear	1	
C7	2nd winding gear shaft	1	
C8	2nd winding gear seat	1	
C19	Clutch lever spring	1	
C21	Hold lever spring	1	
0-C23	3rd winding gear assy. (C23, C10, C11, C12, C13, C14, C15, C16, C17 x2, C18, C19, C20, C21, C22, C24, W68, BO1 x30)	1	
0-C25	Charge lever retainer screw assy. (C25, C184)	1	
C32	Three-forked lever shaft	1	
0-C33	Three-forked lever assy. (C33, C34, C35, C41)	1	
C36-00A -00B	Mirror up spring A " B	1	
C37	Coupling spring	1	
0-C38-00A -00B	Shutter conrod assy. A " B	1	
C42	Clutch adjusting plate	1	
0-C44	Charge lever assy. (C44, C45, C46, C47)	1	
0-C49	Mirror 2nd conrod assy. (C49, C48, C50)	1	
C51	Mirror coupler lever shaft	1	

Parts No.	Description	Quantity	Interchangeability
0-C55	1st diaphragm coupler lever assy. (C55, C52, C53, C56, C57, C58)	1	
C59	Diaphragm spring	1	
C60	Diaphragm conrod	1	
0-C62	Release lever assy. (C62, C63)	1	
C64	Release lever retainer nut	1	
C65	Release lever spring	1	
C66	Release conrod	1	
0-C67	1st swing lever assy. (C67, C68, C69)	1	
C70	Diaphragm actuating plate	1	
0-C71	2nd swing lever assy. (C71, C72, C73, C74, C75)	1	
0-C76	Guide roller assy. (C76, C73, C74, W62)	1	
C78	Guide collar	1	
0-C79	Preview lever installing plate assy. (C79, C80, C81, C82, C83, C84, C86)	1	
C85	Preview spring	1	
C87	Preview SW contact piece	1	
C88	Preview SW P. C. board	1	
C89	Preview SW contact collar	1	
C90	Insulation collar	1	
C93	Swing lever spring hook screw	1	
C94	Swing lever spring	1	

Parts No.	Description	Quantity	Interchangeability
C96	Release crank pin	1	
C97	Buffer spring installing screw	1	
C98	Release ratchet wheel	1	
C99	Release ratchet wheel shaft	1	
C100	Buffer spring	1	
0-C101	Ratchet claw installing seat assy. (C101, C102, C103, C104, C105)	1	
0-C106	Shutter winding seat assy. (C106, C107, C112, C113, C161, C167)	1	
0-C109	Shutter charge 2nd gear assy. (C109, C110)	1	
C111-00A -00B	2nd gear restitution spring A " B	1	
C115	Installing seat collar	1	
C116	Hold lever	1	
C117	Hold lever shaft	1	
C118	Hold lever restitution spring	1	
0-C121	Shutter charge 3rd gear assy. (C121, C10, C11, C119, C120, C122, C123, C124, C125, C126, C127, C128, C129 x2, C130 x2, C131, C132 x2, C133, C134, C135, BO1 x30)	1	
C137	Spring tension adjusting nut	1	
C138	1st curtain bounce prevention lever spring	1	
C139	1st curtain bounce prevention lever shaft	1	
C140	Retainer ring	1	
0-C141	1st curtain bounce prevention lever assy. (C141, C153)	1	

Parts No.	Description	Quantity	Interchangeability
C142	Friction washer	4	
C143	Bounce prevention lever retainer plate	1	
0-C145	2nd curtain bounce prevention lever assy. (C145, C146)	1	
C147	Bounce adjusting screw	1	
C149	2nd curtain bounce prevention lever spring	1	
C150	Preview lever installing plate screw A	1	
C151	Preview lever installing plate screw B	1	
C152	Diaphragm actuating plate adjusting washer	1	
C156	Timing SW contact collar retainer nut	1	
0-C158	Timing SW lever assy. (C158, C159, C160)	1	
C163	2nd gear shaft	1	
C164	2nd gear shaft retainer screw	1	
C165	Timing SW contact collar	1	
C166	Insulation collar	1	
C168	Timing SW P. C. board	1	
C169	Timing SW lever restitution spring hook screw	1	
C170	Timing SW lever actuating spting	1	
C171	Timing SW lever restitution spring	1	
0-C173	Preview lever assy. (C173, C174)	1	
C175	Installing ring	1	
C176	Preview lever cover	1	

Parts No.	Description	Quantity	Interchangeability
C177	Spring silencer tube	1	
C179-00A	Bounce prevention adjusting collar A (H=3mm)	1	
-00B	Bounce prevention adjusting collar B (H=2.7mm)		
-00C	Bounce prevention adjusting collar C (H=2mm)		
-00D	Bounce prevention adjusting collar D (H=2.5mm)		
C180	Charge lever spring	1	
C181	Buffer lever	1	
C182	Buffer lever retainer screw	1	
C183	Buffer spring	1	
C185	Retainer spring	1	
C186	Friction spring	1	
D1	Timing belt	2	
0-D2	Winding rod assy. (D2, D3, D29, D30 x3, D31, D32, D33)	1	
0-D4	Motor flange assy. (D4, D5)	1	
0-D6	Timing wheel A seat assy. (D6, D7)	1	
0-D8	Timing wheel A assy. (D8, D9)	1	
0-D11	Timing wheel seat assy. (D11, D12)	1	
D13	Ball bearing interior tube	1	
0-D15	Timing wheel assy. (D15, D14)	1	
D16	Retainer spring	1	

Parts No.	Description	Quantity	Interchangeability
0-D17	Vertical socket seat assy. (D17, D18)	1	
D19	Vertical tripod socket	1	
D20	Vertical tripod socket covering	1	
D21	Idlegear shaft	3	
D22	Idle gear washer	3	
D23	1st idle gear	2	
D24	2nd idle gear	1	
D25-00A -00B	Idle gear shaft installing nut A " B	1	
D27	Ball bearing exterior tube	1	
D28	C spring	1	
0-D101	Mirror brake seat assy. (D101, D102 x2, D105)	1	
0-D103	1st gear assy. (D103, D104)	1	
0-D107-00A	Flywheel A assy. (D107-00A, depth=0, D106)	1	
-00B	Flywheel B assy. (D107-00B, depth=0.7, D106)		
-00C	Flywheel C assy. (D107-00C, depth=1.3, D106)		
0-D108	Brake lever assy. (D108, D109, D110)	1	
D111	Brake lever spring	1	
D112	Retainer plate	1	

Parts No.	Description	Quantity	Interchangeability
A0-E1	Shutter block assy. (E1, E2, E3, E4 x2, E5, E6 x2, E7 x2, E8 x2, E9 x2, E10 x2, E11, E12, E13, E14, E15, E16, E17, E18 x2, E19 x4, E20, E21, E22, E23, E24, E25, E26, E27, E28, E30 x2, E31, E32, E33 x2, E34, E35 x2, E36, E37 x2, E38, E40 x4, E42 x2, E44 x2, CSS1.4x1.6 x4, CSS1.4x4, CNS1.4x2.2, CNM1.4x1.4 x2, CNL-B1.4x1.8 x3, W1, W29, W32 x2, W75 x14, LW13 x3)	1	
E8	Pinion bearing	2	
E11	Pinion bearing retainer plate	1	
E34	Shutter curtain shaft retainer plate	1	
E42	Retainer nut	4	
E43	1st curtain cover	1	
I 1	Connector retainer plate	1	
I 2	Retainer rubber	1	
I 3	P. C. board retainer collar	2	
I 4	Support SW contact	1	
I 5	SW contact board	1	
I 6	Insulation collar	2	
I 7	Connector board retainer	1	
I 8	P. C. board retainer plate	1	
I 9	Retainer rubber	1	
I 11	Lead wire retainer C	1	
I 12	Lead wire retainer D	1	
I 13	Lead wire retainer A	1	
I 14	Lead wire retainer B	1	

Parts No.	Description	Quantity	Interchangeability
I 15	Lead wire retainer E	1	
I 16	Lead wire retainer F	1	
I 18	Lead wire retainer tube	2	
I 32	Shutter speed fixing contact	1	
I 33	SW insulation sheet	1	
I 35	X SW protector	1	
I 36	Lead wire retainer H	1	
I 37	Lead wire retainer I	1	
I 38	MD board protection sheet	1	
I 100	X SW	1	
0-I 201	Wind completion SW assy. (I 201, I 202, I 205)	1	
I 203	Insulation collar	1	
I 204	Dust prevention tape	1	
I 300	Function button unit	1	
I 401	C-S selecting SW	1	
I 451	C-S selecting SW seat	1	
0-I 452	C-S selecting disk assy. (I 452, I 453, I 454, I 455)	1	
I 456	C-S selecting disk shaft	1	
K100	AV VR	1	
K113	Restitution spring collar	2	
K114	Diaphragm coupler ring restitution spring	1	
L1	Mirror	1	
L2	Focusing screen	1	

Parts No.	Description	Quantity	Interchangeability
L3	Condenser lens	1	
L4	Prism	1	
L10	10th lens	1	
0-L11	11th lens assy. (L11, L12)	1	
L13	13th lens	1	
M1	Focusing screen holder	1	
M2	Focusing screen holder shaft	2	
M3	Focusing screen retainer frame	1	
0-M4	Focus adjusting frame assy. (M4, M5, M6, M8, M10 x2, M11)	1	
M7	Hook lever restitution spring	1	
M9	LED insulation plate	1	
M12	Focusing screen retainer frame spring	2	
M14	Focus adjusting lever	1	
M15	Adjusting lever shaft	1	
0-M18	Condenser lens holder assy. (M18, M19, M20, M21 x4)	1	
M22	Prism seat	1	
M23	Prism retainer spring	4	
M24	Prism protection plate	2	
M26	Prism cover	1	
M27	Buffer rubber	1	
M28	Prism protection plate, top	1	
M29	Focus adjusting screw	2	

Parts No.	Description	Quantity	Interchangeability
M31	Prism retainer plate	1	
M32	Prism protection plate, front	2	
M33	Adjusting frame retainer spring, left	1	
M34	Adjusting frame retainer spring, right	1	
P1	Installing ring	1	
0-P2	Front lens frame assy. (P2, L5, L6, L7, L8, L9, P3, P4, P5, P6)	1	
P7	Flare prevention frame seat	1	
P8	Adjusting shaft	1	
P9	Flare prevention frame	1	
P10	Spacer	2	
0-P11	Rear lens frame assy. (P11, P1, P16)	1	
P12	Spacer ring (I)	1	
P13	Spacer ring (II)	1	
P14	13th lens retainer ring	1	
P15	Restriction screw	1	
P17	Covering	1	
P18	Guide collar	1	
P19	Eyecup installing ring	1	
P20	Eyecup	1	
S101	Magnet	1	24000-S100
S102	Armature	1	24000-S201
0-S103	Magnet seat assy. (S103, S104, S106 x2)	1	

Parts No.	Description	Quantity	Interchangeability
S119	1st curtain hook lever shaft	1	
S120	1st curtain hook lever	1	
S121	1st curtain hook lever restitution spring	1	
S122	Release lever retainer collar	1	
0-S123	Release lever assy. (S123, S124)	1	
S125	Coupler spring	1	
S126	2nd curtain release spring	1	
S127	Release lever shaft	1	
S128	2nd curtain hook lever	1	
S129	2nd curtain hook lever restitution spring	1	
0-S130	Armature lever assy. (S130, S131, S132)	1	
S133	Manual lever	1	
S134	Magnet retainer screw	2	
S135	Magnet cover	1	
S136	Armature lever shaft	1	
S137	Protector A	1	
S138	Protector B	1	
S139	1st curtain hook collar	1	
S200	Diaphragm control block	1	
S300	Motor	1	
T1	Connector board	1	
0-T2	f-volume compensation VR assy. (T2, T3)	1	

Parts No.	Description	Quantity	Interchangeability
T7	Cell frame	1	
T8	Light metering lens	2	
T9	Light seal mask	2	
T10-00A -00B -00C	Adjusting washer A (t=0.3) " B (t=0.2) " C (t=0.1)	2	
T11	Condenser	1	
T200	LCD block	1	
T300	LED block	1	
T400	Lithium battery	1	
T600	MD board assy.	1	
T700	Relay block	1	
T800	P. C. board assy.	1	
T801	Connector retainer plate A	2	
T802	Retainer rubber A	2	
T804	Connector retainer plate B	1	
T805	Retainer rubber B	1	
T806	Receiving plate B	1	
T808	Insulation tape	3	
T850	Relay P. C. board	1	
0-T853	LED assy. (T853, T852)	1	
T870	Reset board	1	
T900	Timer board	1	

LIST OF STANDARD PARTS

Product No.24400

PENTAX 645

Small screws:

Description (Code)	Surface treatment	Position of use	Quantity
CSS1.4x2.5(1101251)	Black nickel	T800, I3, I452	2
		I451, B29	3
		I451, 0-I452, I456	1
CSS1.4x3.5(1101351)	"	B216, 0-B209	1
CSS1.7x1.8(1102181)	"	0-A27, 0-D17	3
		0-A27, B10	1
CSS1.7x2.0(1102201)	"	0-D101, B1	1
CSS1.7x2.5(1102251)	"	A1, 0-C1	1
		A1, 0-D11	2
		A1, K100	1
CSS1.7x3.0(1102301)	"	A1, A18	2
		A18, A200, 0-C79	1
		A18, 0-A501, 0-C79	1
		0-C79, C150	1
		0-C79, C151	1
		A1, A52	4
		A1, 0-A10	2
		A1, 0-A11	2
CSS1.7x3.5(1102351)	"	A203, A200, A52	2
CSS1.7x4.0(1102401)	"	0-A27, 0-A501, B1	1
		0-A27, A200, B1	1
		B9, 0-A501, A18	1
		B9, A200, A18	1
		A203, A200, A223	2
CSS1.7x5.5(1102551)	"	A1, A0-E1, E42	4
CNS1.4x1.4(1081141)	"	T800, T200	2
		T800, T300	2
		T200, T850	2
CNS1.4x1.6(1081161)	"	0-S103, 0-C1	2

Description (Code)	Surface treatment	Position of use	Quantity
CNS1.4x1.8(1081181)	Black nickel	M31, M32	2
		M31, T800	2
CNS1.4x2.0(1081201)	"	0-C101, S300	1
CNS1.4x2.5(1081251)	"	0-M18, M24	2
		0-D4, S300	1
		E11, A0-E1	1
CNS1.7x1.6(1082161)	"	I13, B1	1
CNS1.7x1.8(1082181)	"	0-B18, B1	4
CNS1.7x2.0(1082201)	"	0-B201, B1	1
		0-D101, B1	1
		0-B101, B1	1
CNS1.7x2.5(1082251)	"	I11, 0-B101, B1	1
		E43, B1	1
		0-C1, A1	1
		B5, B1	1
CNS1.7x2.8(1082281)	"	P1, B24	2
CNS1.7x3.5(1082351)	"	I14, 0-I201, B1	1
CNS2.0x5.0(1083501)	"	0-A101, A129, A1	4
CNS2.3x6.5(1084651)	"	A1, B1	3
CNS2.3x8.0(1084801)	"	A1, B1	1
CSM1.7x3.0(1112301)	"	B122, 0-B101	1
CSM1.7x8.0(1112801)	"	C175, 0-C173, 0-C79	1
CSM2.0x3.2(1113321)	"	D19, 0-D17	4
CSM2.0x4.0(1113401)	"	0-D17, A1	5
CNM1.4x1.6(1091161)	"	C42, 0-C1	1
CNM1.4x2.0(1091201)	"	0-C76, 0-C1	1
CNM1.4x2.2(1091221)	"	0-B104	3
CNM1.4x8.0(1091801)	"	I100, 0-C1	2
CNM1.7x2.5(1092251)	"	B24, B1	2

Description (Code)	Surface treatment	Position of use	Quantity
CNM1.7x4.5(1092451)	Black nickel	A0-E1, C115, 0-C1	1
CNM1.7x5.0(1092501)	"	A1, A51, A58, S300	2
CNM2.0x5.5(1093551)	"	C139, 0-C1	1
CNL-B1.4x1.6(1151161)	"	A215, I451, T800	1
		T800, M26	2
CNL-B1.4x1.8(1151181)	"	A0-E1, E34	3
CNL-B1.4x2.0(1151201)	"	0-B137	2
		A52, A53	1
		T300, T800, M4	2
		S135, 0-S103	1
CNL-B1.4x2.5(1151251)	"	S135, 0-S103	1
		C70, C152, 0-C67	2
		T200, B27	3
CNL-B1.4x3.5(1151351)	"	C90, 0-C79	1
CNL-B1.4x4.0(1151401)	"	A8, A14	1
CNL-D1.4x1.6(1171161)	"	0-C158, 0-C106	1
CNL-D1.4x2.5(1171251)	"	S200, 0-C1	1
		0-B134, 0-B101	1
		I36, I8, I9, T600	
		T800, A87	1
		I37, I8, I9, T600	
		T800, A87	1
CNL-D1.4x3.0(1171301)	"	T600, T800, A1	2
		T7, T10, M26	2
CNL-D1.7x2.0(1172201)	"	0-B14-01, B1	1
		B13-01, 0-B14-01	
		B1	3
CNL-D1.7x2.5(1172251)	"	0-A601, 0-A9	2
		I15, A1	1
		0-A45, A1	2
		T700, A1	1
		A72, A71	1
CNL-D1.7x3.0(1172301)	"	A19, A1	1
		T600, A1	1

Description (Code)	Surface treatment	Position of use	Quantity
CNL-D1.7x3.0(1172301)	Black nickel	I6, I32, I33, I4, I5	2
		A1, 0-M18	4
		A1, M33	2
		A1, M34	2
		M31, A1	2
		A1, T600, T800	1
CNL-D1.7x3.5(1172351)	"	K100, A1	1
		K100, I7, A1	1
		A121, K100	2
CNL-F1.7x2.5(1192251)	"	0-D6, A1	2
		0-B150, 0-B101	2
		B114, 0-B101	1
		B213, 0-B101	1
		B2, B3, B1	1
		B242, B243, 0-B201	1
CNL-F1.7x4.0(1192401)	"	M14, A1	1
		M14, M15, A1	1
CNL-F2.0x8.5(1193855)	Black nickel(PB-G30)	A511, 0-A501, A1	2
TX-CSS1.4x3.0(5101301)	Black nickel	I451, I400	2
TX-CSS1.4x4.0(5101401)	"	I1, I300, A200	2
TW-CNS1.4 2.5(8081251)	"	0-A101, A105	1
TX-CNS1.4x3.5(5081351)	"	I300, A200	2
TX-CNL-B1.4x2.0(5151201)	"	T200, T850	1
TX-CNL-B1.4x2.5(5151251)	"	T800, T7	2
TX-CNL-B1.4x3.0(5151301)	"	T800, T600, A1	1
TX-CNL-D1.7x3.0(5172301)	"	T900, A1	2
TX-CNL-D1.7x3.5(5172351)	"	A219, A200	2
L-CNL-D1.4x1.6(1151351)	"	C78, 0-C71, 0-C1	1
L-CNL-G1.7x3.0(1902301)	"	0-B137, 0-B101	1
Set-T1.4x2.5(1061251)	"	0-M18, M24	2
Set-T1.4x3.5(1061351)	"	0-M18, M24	2

Washers:

Description	Material	Thickness	Position of use	Quantity
W1	Stainless	0.2, 0.3	0-C76, 0-C1	1
W1	Brass	0.7	E11	1
W2	Brass	0.2	T300	2
W2	Stainless	0.25	A125, A124, A1	2
W3	Stainless	0.1	A17, A16, A1	1
W3	Brass	0.3	A1, K100 A126, A1	1 1
W3	Brass	0.4	B1, 0-I201	2
W6	Brass	0.03, 0.05, 0.1, 0.2	0-C158	1
W6	Brass	0.05, 0.1, 0.3	0-C67	1
W6	Stainless	0.2, 0.4	C179, C147	1
W8	Stainless	0.3	C97, C100 C100, C98 C98, C99	1 1 1
W8	Stainless	0.05, 0.07, 0.1	0-C71, 0-C1	1
W11	Brass	0.6	0-A64, A8	1
W11	Stainless	0.25	A8, 0-A10	1
W16	Stainless	0.05, 0.1, 0.15, 0.2	0-D2	1
W21	Brass	0.1, 0.2	0-D15, 0-D17	1
W25	Stainless	0.3	C12	1
W27	Stainless	0.3	0-D6, 0-D8	1
W28	Stainless	0.03, 0.05, 0.1	C78, 0-C71	1
W29	Brass	0.2	S135	1
W29	Brass	0.5	E34, A0-E1	1
W31	Stainless	0.5	0-C33, 0-C1	1

Description	Material	Thickness	Position of use	Quantity
W36	Brass	0.5	0-B118, B121	1
W36	Stainless	0.03, 0.05	0-B201, B226	1
W36	Stainless	0.1	B4, B2	1
W62	Brass	0.1	M2	2
W62	Brass	0.6	M2, 0-M4	2
W66	Brass	0.03, 0.05, 0.15 0.2, 0.25, 0.3	0-B137	1
W66	Brass	0.03, 0.05	B211, B213	1
W66	Stainless	0.1	0-B101, B110 0-B101, B116 0-B101, B157	1 1 1
W66	Stainless	0.05, 0.1	B154, B156	1
W68	Stainless	0.1, 0.15, 0.2, 0.25	0-A9, 0-A11	1
W75	Stainless	0.2	A121 S130, S102	2 1
W75	Stainless	0.15, 0.2	C60	2
W75	Brass	0.05, 0.1, 0.15 0.2, 0.25	0-B104, B108	1
W85	Brass	0.1	M14, M15	1
W85	Brass	0.15	K100, A121	2
W89	Delrin	0.8	M26, T800	2
W91	Stainless	0.05, 0.1	B241, B203	1
W100	Stainless	0.3	0-B201, B202	1
W101	Stainless	0.1	0-B101, B132	1

Lock washers:

Description	Position of use	Quantity
LW7	B20	1
	M2, 0-M4	2
LW10	C66, 0-C62	1
	C66, C96	1
	S102, 0-S130	1
LW13	0-C33, 0-A64	1
	C60, 0-C71	1
	0-C55, C60	1
	0-C67, 0-C71	1
	0-C33, 0-C49	1
	0-S123, 0-C38	1
LW17	0-D6	1

Balls:

Description	Material	Diameter	Position of use	Quantity
BO1.o	Steel	1.0mm	0-D2, D27	13
			0-D15, D13	13
			C2, C4	13
			C6, C8	12
			0-C106, 0-C109	22
BO1.5	Steel	1.5mm	I451, 0-I452	2

PRODUCT No.24400

PENTAX 645

SERVICE MANUAL

ENGLISH

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TABLE OF CONTENTS

Page

DISASSEMBLY PROCEDURES I ---------- 3 - 13
ASSEMBLY PROCEDURES I ---------- 13 - 52
8. Mirror seat installing position ---------- 16
9. Angle of 47 deg of Mirror seat ---------- 17
10. Diaphragm control block ---------- 18
15. Shutter block ---------- 20
16. Shutter block installation ---------- 21 - 22
17. Start position of 2nd curtain and Overlapping of 1st curtain and 2nd curtain. ---------- 22 - 23
19. Installation of Film chamber to Body. ---------- 23 - 24
24. Adjustment for the position of Mirror sear when the shutter is released. ---------- 25
25. Mirror brake ---------- 26 - 27
26. Mechanical back ---------- 28
28. Prism and related parts ---------- 28 - 29
29. Optical axis of Prism ---------- 29
31. Optical axis of Relay lens ---------- 30
32. Flare prevention frame ---------- 30 - 31
33. Focusing ---------- 31 - 32
40. Installation for Support SW contact and soldering lead wires. -- 34 - 35
41. MD board assy. ---------- 35
44. P. C. board ---------- 36 - 37
45. Soldering lead wires on the left side of T800. ---------- 37
46. Soldering the lead wires on T800 and T850. ---------- 38
47. Wind completion SW ---------- 39
48. Shutter curtain speed ---------- 39 - 40
49. Shutter curtain bounce ---------- 40 - 41
50. Shutter speed ---------- 41
51. Check the function of each SW ---------- 42
52. X synch time lag ---------- 42
53. Diaphragm-shutter synch time ---------- 43 - 44
54. Swing-lever velocity ---------- 44
55. Level adjustment for Aperture control voltage -------- 45
56. AV VR adjustment ---------- 46
57. Exposure value calibration ---------- 46 - 48
58. Mount connector pin ---------- 48
59. Ready light signal and Quench signal ---------- 49
60. TTL-ASL adjustment ---------- 49 - 50
66. Diopter ring ---------- 52

DISASSEMBLY PROCEDURES II ---------- 53 - 56
ASSEMBLY PROCEDURES II ---------- 57 - 71
1. Curtian hook lever block ---------- 57 - 58
17. Shutter charge 3rd gear and curtain bounce prevention mech. -- 63 - 65

18. Magnet installation position ----------65
20. Over-charge of Shutter conrod ----------66
24. Shutter winding seat assy. ----------68
28. Over-charge and Charge sequence of Wind mech. -----69

DISASSEMBLY PROCEDURES III ---------- 72 - 73
ASSEMBLY PROCEDURES III ----------73 - 75
1. Disassembly of Film advance control seat assy. ------ 76
Assembly of Film advance control seat assy. ---------77

EXPLANATION OF MECHANICAL SHUTTER SPEED ---------- 81

EXPLANATION OF FILM TRANSPORT MECHANISM ---------- 82 - 84

TOOL LIST ---------- 85 - 86

DISASSEMBLY PROCEDURES I

1. Body covering

1-1 A26 Body covering, right
1-2 A43 Body covering, left
1-3 A225 Top cover covering

2. Cover plate, right A18

2-1 CSS1.7x3 x4
2-2 CSS1.7x4 x2
2-3 A18 Cover plate, right

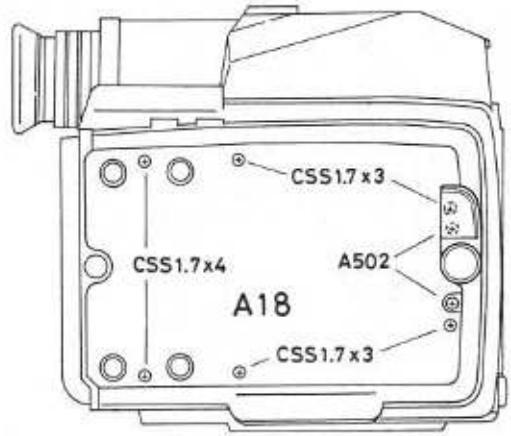


Fig. 1

3. Cover plate, left assy. 0-A27

3-1 CSS1.7x1.8 x4
3-2 CSS1.7x4 x2
3-3 0-A27 Cover plate, left assy.
3-4 Unsolder the gray lead wire (No. 58) from the Relay P. C. board (B33).

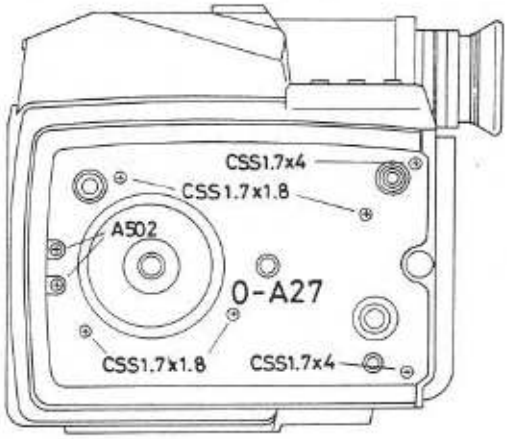


Fig. 2

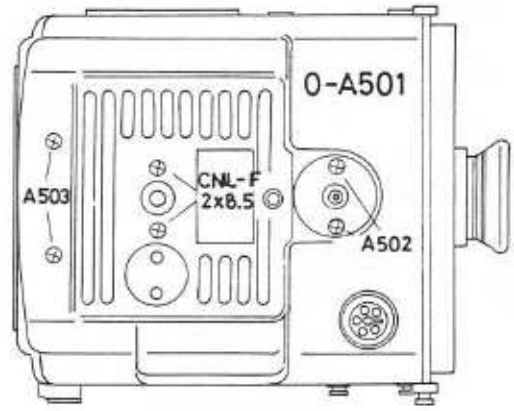


Fig. 3

4. Bottom cover assy. and the related parts.

4-1 Unscrew Film winding knob assy. (0-A504) from the Bottom cover.
4-2 A503 x2 Cover retainer screw B
4-3 A502 x4 Cover retainer screw A
4-4 CNL-F2x8.5 x2
4-5 A511 x2 Cover retainer collar
4-6 Remove Bottom cover assy. (0-A501) from body while depressing Lens release button.

4-7 A44 Film winding knob installing seat
4-8 T400 Lithium battery
4-9 A21 Tripod seat

5. Eyepiece

5-1 A216 Cover plate
5-2 To remove Eyepiece, insert a screw driver into the hole of Top cover to remove Restitution screw (P15) and Guide collar (P18), then rotate Eyepiece counterclockwise.

5-3 Eyepiece

6. Top cover assy. A200

6-1 A204 Accessory shoe spring
6-2 CSS1.7x3.5 x2 ---------- Eyepiece side
6-3 A502 x3 x2 Cover retainer screw
6-4 A517 Adjusting collar
6-5 CNL-E1.7x3 x2 PG-30

* 6-4 (A517) and 6-5 (CNL-E1.7x3) are only used when the space is observed between Top cover and Bottom cover.

6-6 A200 Top cover assy.

Note: When removing Top cover, be careful as Relay P. C. board (T850) is attached to the Top cover.

6-7 TX-CSS1.4x4 x2
6-8 I1 Connector retainer plate
6-9 I2 Retainer rubber

7. Vertical socket seat assy. 0-D17

7-1 CSM2x4 x5
7-2 0-D17 Vertical socket seat assy.
7-3 W21 t=0.2

8. P. C. board assy. T800 / Relay P. C. board (T850).

8-1 Disconnect Connector board (T1) from Relay P. C. board (T850).

Note:
In order to prevent the connector part of the Relay P. C. board (T850) from breaking, be very careful when pulling out the Connector board (T1) from T850.

8-2 Unsolder the twenty lead wires from the top part of P. C. board (T800) and the seven lead wires from the Timing belt side of P. C. board.

8-3 Unsolder the four lead wires from the Relay P. C. board (T850).

8-4 Unsolder the two lead wires from the X synch. relay P. C. board (A53).

8-5 CNL-B1.4x2 X synch. relay P. C. board

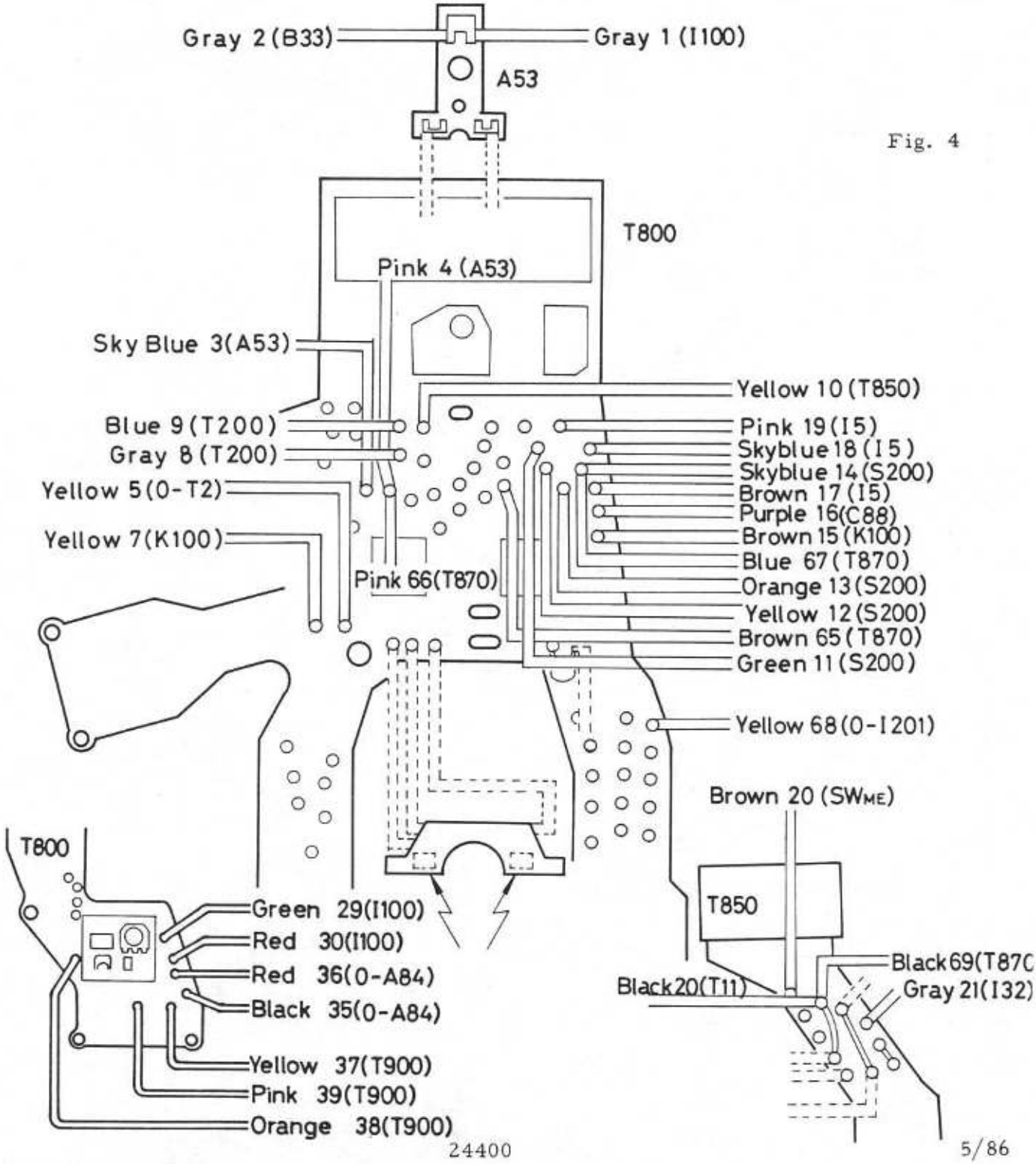


Fig. 4

8-6 CNL-D1.4x2.5 x2 --------- Timing belt side
8-7 I36.I37 Lead wire retainer H. Lead wire retainer I
8-8 I8. I9 P. C. board retainer plate. Retainer rubber
8-9 CNL-D1.7x3

8-10 Turn Timing wheel assy. (0-D15) in the clockwise direction until the screw (TX-CNL-B1.4x3) can been seen in the hole of Timing wheel assy. (0-D15).

8-11 TX-CNL-B1.4x3
8-12 CNL-B1.4x2 x2 / W2 x2 (t=0.2) ----- located on LED P. C. board.
8-13 CNL-B1.4x2. 5 x3 ---------located on LCD block.
8-14 CNL-B1.4x1.6 ------------ right upper side of Adjusting resister.
8-15 CSS1.4x2.5 x2
8-16 I3 x2 P. C. board retainer collar
8-17 CNL-B1.4x1.6 x2 --------- located on the prism.
8-18 W89 (t=0.8 Delrin) x2

8-19 Loosen two screws (CNS1.4x1.8) which are located the inside of Prism retainer plate (M31), then pull out P.C. board (T800) from the Prism retainer plate.

8-20 Unscrew two screws (TX-CNL-B1.4x2.5), then remove Photosensor from Photosensor holder.
8-21 T800/T850/T200/T300 P. C. board assy. /Relay P. C. board/LCD block/LED block

9. Relay lens

9-1 Loosen Hexagon screws (A50) with Hexagon driver (HD-M2).
Tools: Hexagon driver (HD-M2)
9-2 CNS1.7x2.8 x2
9-3 Relay lens

HD-M2

10. Flare prevention frame P9

10-1 T-CNL-B1.4x2 x2
10-2 P9 Flare prevention frame
10-3 P8 Adjusting shaft

11. Viewfinder and other related parts.

* Set the shutter in the cocked position.

11-1 L2 Focusing screen

16. MD board assy. T600

16-1 Unsolder the sixteen lead wires from MD board assy. (T600).

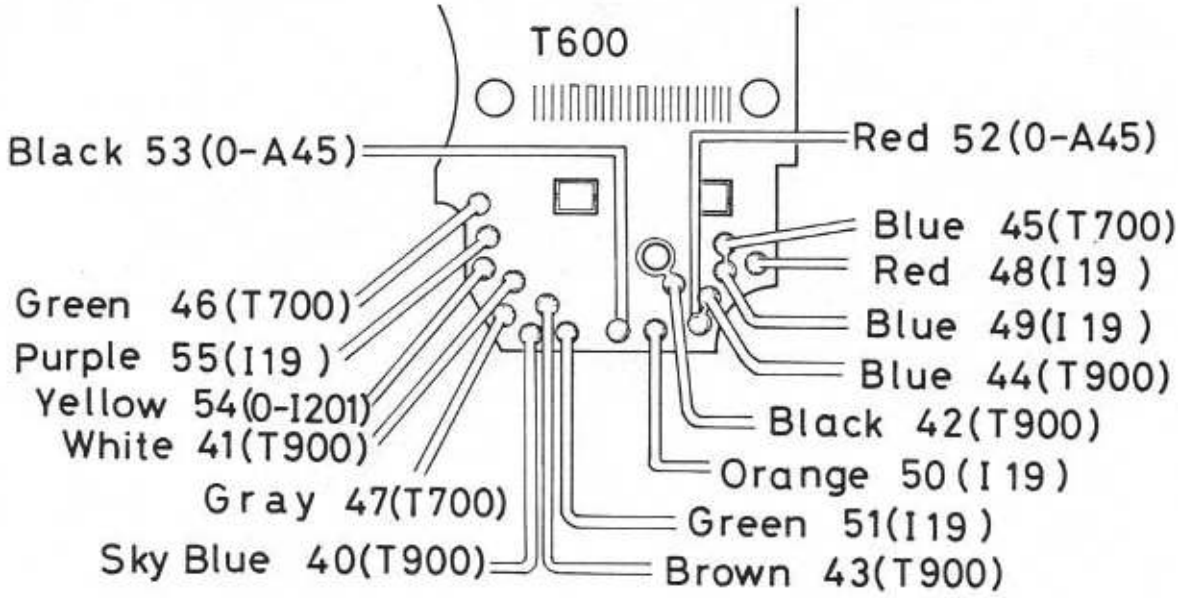


Fig. 5

16-2 CNL-D1.7x3

17. Wind actuating lever assy. 0-B159

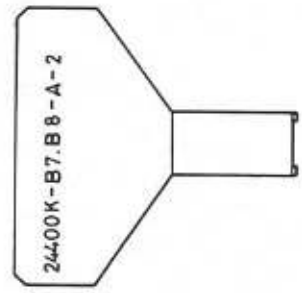
17-1	B173	Wind actuating lever retainer screw
17-2	0-B159	Wind actuating lever assy. --------- Left-handed screw
17-3	B172	Wind actuating lever collar
17-4	B162	Seat adjusting lever spring

18. Removing Film chamber

18-1 B8 Grip pin B Tools: 24400K-B7, B8

Note: Apply solvent (KETON OR ACETON) and wait until adhesive is melt to facilitate this removing.

18-2	CNS1.7x2, I 11	Lead wire retainer C
18-3	CNL-D1.7x2.5	---------- Relay block side
18-4	CNS2.3x7.5	
18-5	A72	Shutter block retainer plate
18-6	I 16	Lead wire retainer F
18-7	CNS2.3x6.5 x3	



18-8 Film chamber

Note: With taking care of engagement between Mirror arm left (0-A9) and the gears of Mirror brake, remove Film chamber from Body.

19. Shutter block assy.

* Make sure that Shutter block is uncocked position. In other wards, the edger of Shutter curtain must be located at top.

19-1 CNM1.7x4.5
19-2 C115 Installing seat collar
19-3 CSS1.7x5.5 x4
19-4 A0-E1 Shutter block assy.

20. Preview lever installing plate assy. 0-C79

20-1 Unsolder Purple lead wire (No. 16) from 0-C79.
20-2 CSS1.7x3 x2
20-3 0-C79 Preview lever installing plate assy.

21. Battery case assy. 0-A45

21-1 CNL-D1.7x2.5 x2
21-2 0-A45 Battery case assy.

22. X SW I100

22-1 CNM1.4x8 x2
22-2 I100 X SW
22-3 I35 X SW protector
22-4 C152 Diaphragm actuating plate adjusting washer

22-5 Unsolder Gray lead wire (N0. 1) from the X SW.

23. Winding rod assy. 0-D2

* Make sure that Wind mech. assembly is uncocked.

23-1 Attach Holding gear (24400J-D3-A) as shown in Fig. 6.
Tools: 24400J-D3-A

23-2 Loosen 1st winding gear (C2) with a tool (234K-A33-A). ---Left handed
Tools: 234K-A33-A

Note: To remove Winding rod (0-D2), just loosen 1st winding gear (C2) with a tool (234K-A33-A), then turn Winding rod (0-D2) clockwise until it removes.

23-2	0-D2	Winding rod assy.
23-3	W16	for Adj.
23-4	CSS1.7x2.5 x2	
23-5	0-D11	Timing wheel seat assy.

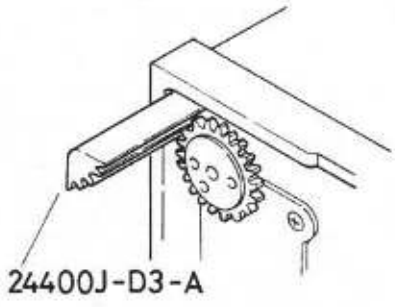


Fig. 6

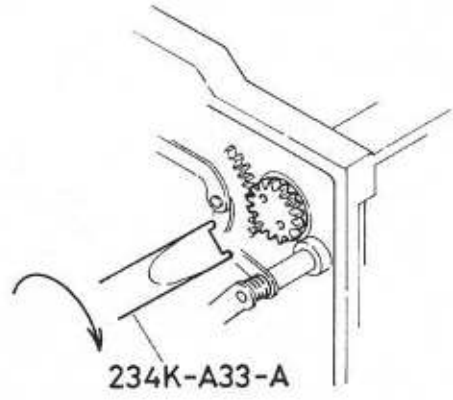


Fig. 7

24. Support SW contact I4

24-1 Unsolder three lead wires (two blacks and one pink) from ES magnet and Timing SW from the SW contact board (I5).

24-2	CNL-D1.7x3 x2	
24-3	I6 x2	Insulation collar
24-4	I32	Shutter speed fixing contact
24-5	I33	SW insulation sheet
24-6	I4	Support SW contact
24-7	I5	SW contact board

25. Wind mech. block

25-1 Unsolder the four lead wires from the Diaphragm control block (S200).

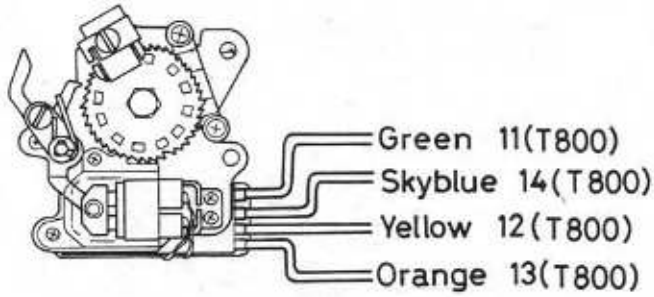


Fig. 8

25-2 LW13

25-3 Discconect the Mirror actuating lever assy. (0-A64) from the Three-forked lever assy. (0-C33).

25-4 CSS1.7x2.5

Note: To unscrew CSS1.7x2.5, move 2nd curtain bounce prevention lever assy. (0-C145) upward. After unscrewing it, be sure to reposition it.

25-5 CNS1.7x2.5

25-6 C150 Preview lever installing plate screw A

25-7 Wind mech. block

* Pushing up the Swing lever half way makes removing the Wind mech. block from the body easier.

25-8 A23 Spacer

26. Cell frame assy. 0-A84

26-1 A82 x2 Cell cover retainer screw

26-2 Remove Cell frame assy. (0-A84) backward.

27. Mirror seat assy. 0-A601

27-1 Unhook Mirror restitution spring (A67) and unscrew Mirror restitution spring shaft (A68).

27-2 CNL-B1.4x4, A14 Mirror flip-up collar

27-3 CNL-D1.7x2.5 x4

Note: When unscrewing the screws (CNL-D1.7x2.5), take care not to bend Mirror arms (A8 and 0-A9).

27-4 0-A601 Mirror seat assy.

27-5 CSS1.7x3 x2

27-6 0-A10 Mirror arm shaft, right assy.

27-7 CSS1.7x3 x2

27-8 0-A11 Mirror arm shaft, left assy.

28. Timing wheel A seat assy. 0-D6

28-1 CNL-F1.7x2.5 x2
28-2 0-D6 Timing wheel A seat assy.

29. Dumper plate A16

29-1 A22 Dumper plate spring
29-2 A17 Dumper plate shaft
29-3 A16 Dumper plate
29-4 W3 (t=0.1)
29-5 CNL-D1.7x3
29-6 A19 Adjusting collar

30. Motor S300

30-1 Unsolder two lead wires coming from the Motor (S300) from the Relay block (T700).
30-2 CNS1.4x2.5 -------- just loosen
30-3 0-D4 Motor flange assy.
30-4 CNM1.7x5 x2
30-5 A58/A51 Motor spacer / Motor adjusting washer
30-6 S300 Motor
30-7 CNS1.4x2 ---------- just loosen
30-8 0-C101 Ratchet claw installing seat assy.

31. Relay block T700

31-1 CNL-D1.7x2.5
31-2 A71 Relay block retainer screw

32. Timer board T900

32-1 TX-CNL-D1.7x3 x2
32-2 T900 Timer board

33. Connector pin A120

33-1 CNL-D1.7x3.5 x2
33-2 W75 (t=0.2)
33-3 A121 Connector pin holder
33-4 A122 x7 Connector pin spring

34. Mount assy. 0-A101

34-1	CNS2x5 x4	
34-2	0-A101	Mount assy.
34-3	A129	Adjusting washer

35. AV VR K100

35-1	CNL-D1.7x3.5 x2	
35-2	CSS1.7x2.5	
35-3	K100	AV VR
35-4	I7	Connector board retainer

ASSEMBLY PROCEDURES I

1. Connector board T1

1-1	T1	Connector board

Note: 1. Connector board (T1) should be positioned with a double faced tape on Body so that the tap holes of Body and the holes of Connector board are matched.
2. There shoud be no dirt on Connector board (T100).

2. AV VR K100

2-1	I7	Connector board retainer

* Place Connector board retainer (I7) on Connector board (T1).

2-2	W85x2	for Adj. (t=0.5 is initially used). located at top. Adhesive: Pliobond
2-3	W3	for Adj. (t=0.3 is initially used). located at bottom. Adhesive: Pliobond
2-4	K100	AV VR
2-5	K113 x2	Restitution spring collar
2-6	K114	Diaphragm coupler ring restitution spring

2-7 Confirmation:
Diaphragm coupler ring restitution spring (K114) should be positioned at the outside of Restitution spring collar (K113).

2-8 CSS1.7x2.5
2-9 CNL-D1.7x3 x2

Note: 1. Tighten the screws while pushing Connector board retainer (I7) toward the top part of Body.
2. Make sure that the edge of the slider is not located on the AV VR stopper (A130).

3. Connector pin and the related parts.

3-1 Insert Connector pins (A120 x7) and Connector pin springs (A122 x7) into Connector pin holder (A121).

Note: Avoid touching Connector pins (A120) and Connector pin springs (A122) with bear fingers as possible.

3-2 Insert the Connector pins and the Connector pin springs into the Connector holder (A121), then assemble them to theAV VR (K100).
* When assembling those parts, turning the Body upside down facilitetes this assembly.

3-3 CNL-D1.7x3 x2

3-4 Confirmation:
1. When depressing each connector pin, the connector pin must return its original position.
2. Check continuity between Connector pin (A121) and Connector board (T1) with a circuit tester. Refer to Fig. 9.
3. When rotating a sliding part of AV VR (K100) in a large angle and a small angle , it must return to its original position smoothly.

4. Mount assy. 0-A101

4-1 A129 x4 Adjusting washer
* A129-00G (t=0.2) have been initially used.

4-2 0-A101 Mount assy.

4-3 CNS2x5 x4

4-4 Confirmation:
Make sure that the Lens release lever functions smoothly when pressing the Lens release button.

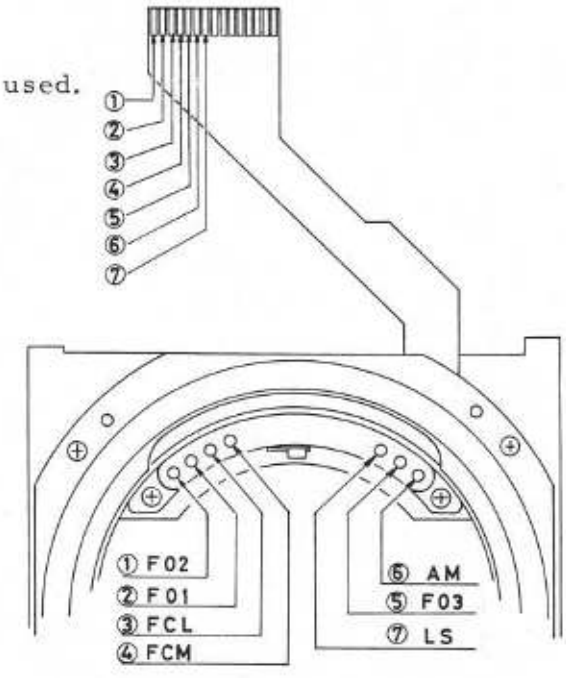


Fig. 9

5. Motor S300 and related parts.

5-1 Fix Ratchet claw installing seat assy. (0-C101) to the shaft of Motor (S300) temporarily.

5-2 CNS1.4x2

5-3 A58 Motor spacer

* Glue Motor spacer (A58) on the top end of Motor.

Adhesive: Pliobond

5-4 S300 Motor spacer

* Seat Motor (S300) with black lead wire bottom.

5-5 CNM1.7x5 x2 Adhesive: Arontite

Adjustment

Install Motor adjusting washer (A51) so that the side of Motor (S300) is in parallel with the body casting.

5-6 Install Motor flange assy. (0-D4) to Motor and adjust its height by using the jig (Motor Installing Frange Spacer) as shown in Fig. 10.

Tools: 24400J-D000-A

5-7 CNS1.4x2.5

* Fix the flat part of Motor shaft. Refer to Fig. 11.

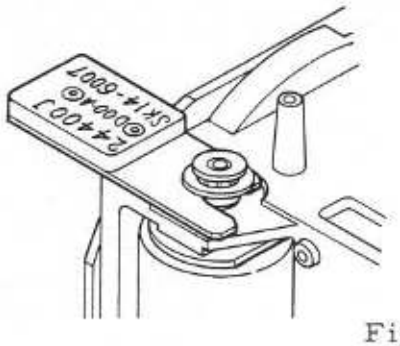


Fig. 10

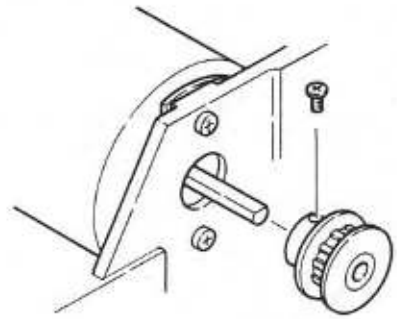


Fig. 11

6. Mirror seat assy. 0-A601

6-1 Put Cellophane tapes on Mirror to prevent it from scratching.

6-2 0-A10 Mirror arm shaft, right assy.

6-3 CSS1.7x3 x2

6-4 A14 Mirror flip-up collar

6-5 CNL-B1.4x4

6-6 0-A11 Mirror arm shaft, left assy.

6-7 CSS1.7x3 x2

6-8 0-A601 Mirror seat assy.

6-9 W68 (t=0.25 for Adj.)

6-10 0-A9 Mirror arm left assy.

6-11 CNL-D1.7x2.5 x4 ------ tighten temporarily.

6-12 A67 / A68 Mirror restitution spring / Mirror restitution spring shaft

7. Dumper plate A16

7-1 A19 Adjusting collar
7-2 CNL-D1.7x3 ------ tighten temporarily.

* Set the Mirror seat at the flipped-up position.
7-3 W31 (t=0.1)
7-4 A16 Dumper plate
7-5 A17 / A22 Dumper plate shaft / Damper plate spring
Adhesive: Pliobond

8. Adjustment: Mirror seat installing position

Tools: Master Seat Ring for 244 (MSR-244)
Mirror Seat Installing jig (24400J-A601-A)

8-1 Loosen the four screws (CNL-D1.7x2.5) which are fixing Mirror seat.

8-2 Mount MSR-244 on Body and then mount 24400J-A601-A on MSR-244. Refer to Fig. 12.

8-3 Tighten the four screws (CNL-D1.7x2.5) firmly while pushing Mirror seat with a finger in the direction arrow as shown in Fig. 12.
Adhesive: Arontite

8-4 Dismount 24400J-A601-A and MSR-244 from Body.

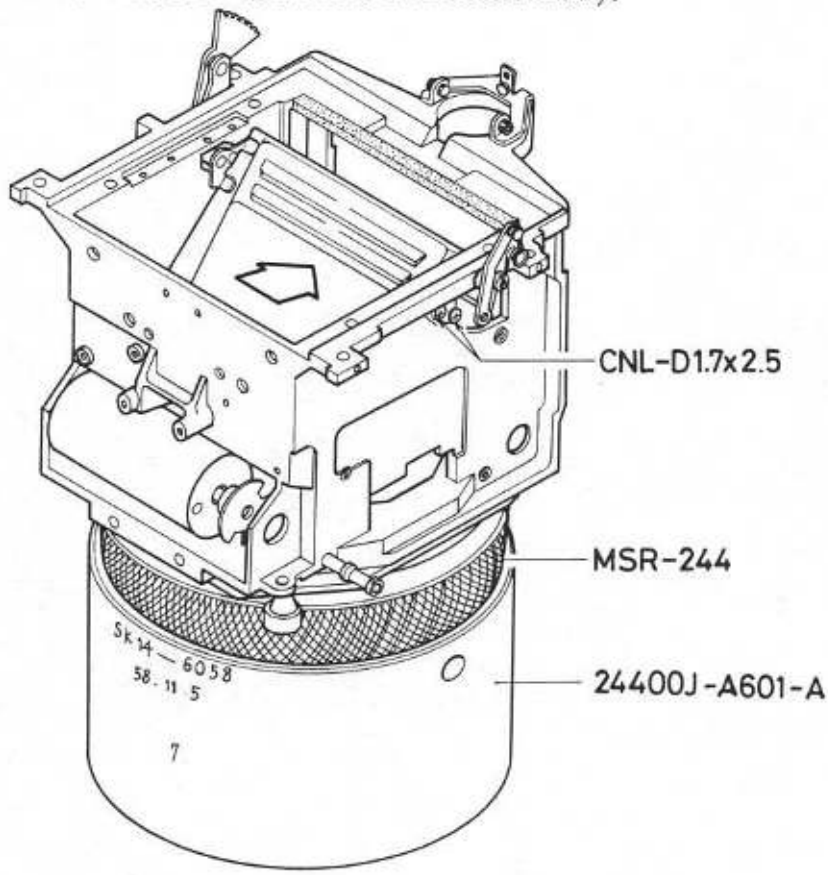


Fig. 12

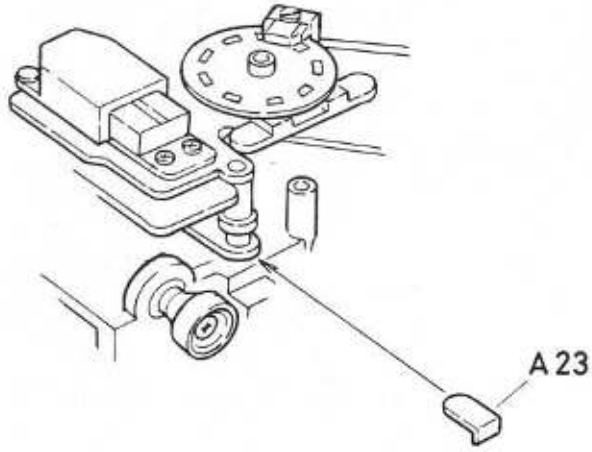
9. Adjustment: The angle of 47 deg of the Mirror seat.

Tools: Master Seat Ring for 244 (MSR-244)
Mirror angle 47° jig (24400N-L1-A)

9-1 Install Wind mech. block to Body.
* It can be easily installed if Mirror seat is set at flipped-up position.

9-2 CSS1.7x2.5, CNS1.7x2.5, C150 Preview lever installing plate screw A.

9-3 Insert the Spacer (A23) which 0.2mm thicker than the clearance between the bottom side of the Diaphragm control block (S200) and the body casting. Refer to Fig. 13.



Parts No.	Thickness
A23−00A	0.4mm
−00B	0.5mm
−00C	0.6mm
−00D	0.7mm
−00E	0.8mm

Fig. 13

9-4 Place Mirror angle 47° jig on Mount as shown in Fig. 14.

Note:
Be careful not to make scratches on the Body mount.

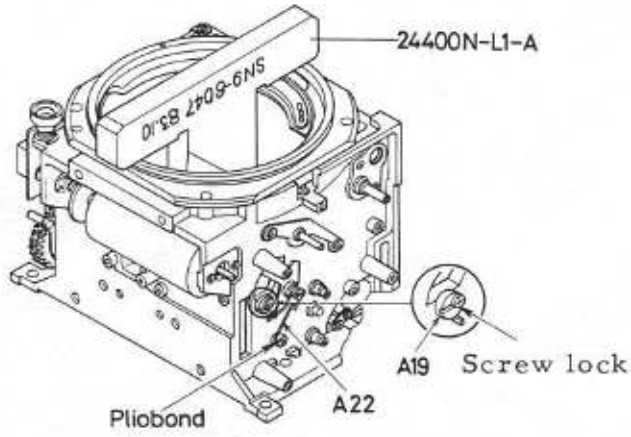


Fig. 14

9-5 Adjustment:
The adjustment can be made by turnning Adjusting collar (A19).
Adhesive: Threebond 1405D

9-6 Confirmation

1. With placing the jig Mirror angle 47° jig, there should be no slit between the jig and the entire surface of Mirror seat.
2. Mirror seat should not move when moving away the jig from Mirror seat.

9-7 Hook Mirror actuating lever assy. (0- A64) to Three-forked lever assy. (0-C33).

9-8 LW13

10. Diaphragm control block S200

* Set Wind mech. block in the charge position.

10-1 Confirmation: Engagement of the Diaphragm control block (S200).

1. Push the lever in the arrow direction as shown in Fig. 15 to set the magnet in the holding condition.
2. Push Swing lever up fully and remain this condition with a finger, make sure that Palser gear moves 1.5 to 2 teeth when lightly turning the Palser gear.
3. Do the same confirmation in the same manner as mentioned above when Swing lever is set at the bottom position.

10-2 Adjustment: Engagement of the Diaphragm control block (S200).

1. To adjust the engagement of S200, loosen the two screws (CNL-D 1.4x2 and C93) then swing S200 by making the screw (CSS1.4x2) work as a pivot, so that the Palser gear can move 1.5 - 2 teeth.
2. Tighten CNL-D1.4x2.5 and C93 (Swing lever spring hook screw) firmly. Adhesive: Arontite
3. Hook Swing lever spring (C94) to the shaft of Diaphragm conrod (C60).
4. Unscrew CSS1.4x2 from S200.

10-3 Confirmation: Function of Swing lever.

1. Swing lever must move smoothly when it moves to the top and bottom position.

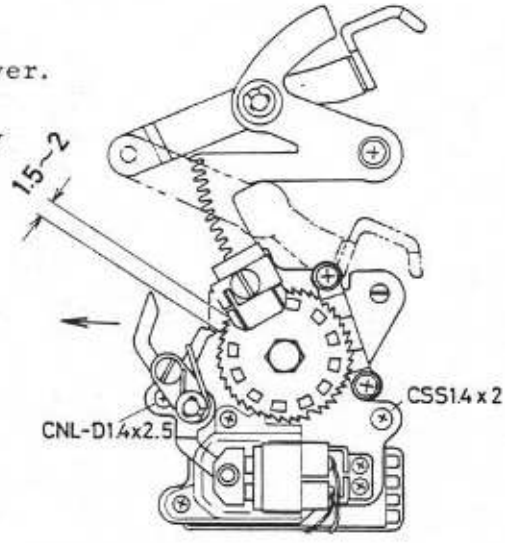


Fig. 15

11. Winding rod assy. 0-D2

11-1 0-D11 Timing wheel seat assy.
11-2 CSS1.7x2.5 x2
11-3 Install W16 to Winding rod assy. (0-D2).

* Wind mech. block is in the uncocked position.
11-4 0-D2 Winding rod assy. ------ left-handed screw
Tools: 24400J-D3-A
234K-A33-A

11-5 Confirmation:
There should be 0.2mm play in the vertical direction of Winding rod.

12. Timing wheel and the related parts.

12-1 0-D6 Timing wheel A seat assy.
12-2 CNL- 1.7x2.5 x2 ----- tighten temporarily.
12-3 0-D8 Timing wheel A assy.
12-4 W27 (t=0.5)
12-5 LW17
12-6 D1 Timing belt
12-7 0-D15 Timing wheel assy.
12-8 D1 Timing belt

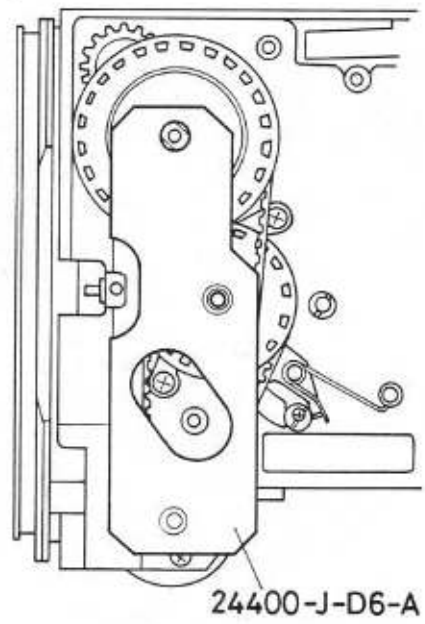


Fig. 16

12-9 Adjustment:
Position Timing wheel A assy. (0-D6) by using Idole wheel axis positioning jig (24400J-D6-A). After positioning 0-D6, tighten the screw (CNL-F1.7x2.5 x2) firmly. Tools: Idole wheel axis positioning jig (24400J-D6-A)

13. Adjustment: Ratchet claw installing seat assy. 0-C101

13-1 Adjustment :
Install Ratchet claw installing seat assy. (0-C101) to the motor shaft so that Rachet of 0-C101 positions in the center of Release ratchet wheel (C98).

13-2 CNS1.4x2

Note: Fix the screw at the flat side of the motor shaft. Refer to Fig. 17.

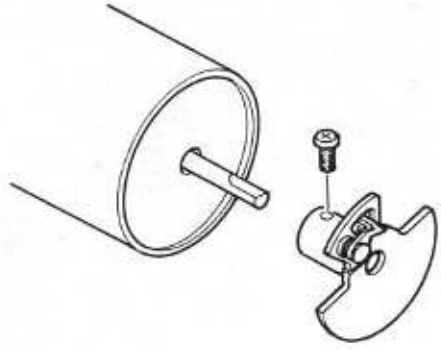


Fig. 17

13-3 Confirmation
Ratchet of 0-C101 should not disengage from the gear when moving Ratchet claw installing seat assy. (0-C101) up and down.

14. Timer board T900

14-1 TX-CNL-D1.7x3 x2 Adhesive: Threebond 1405D

15. Shutter block assy. A0-E1

15-1 Attach Curtain installing jig (24400J-E000-A-2) to Shutter block assy.

15-2 Confirmation: Parallelism of 1st and 2nd Curtain.

1. Turn the one of knobs of Curtain installing jig clockwise to set the edger of 2nd Curatin on the scribed line of Shutter block assy. (A0-E1). And make sure that the edger of 2nd Curtain positions in parallel with the scribed line .
   Standard: The tilt of 2nd Curtain edger should be within 0.3mm.

2. Turn the one of kobs of Curtain installing jig clockwise to set the edger of 1st Curtain on the scribed line of Shutter block assy. (A0-E1). And make sure that the edger of 1st Curtain positions in parallel with the scribed line.
   Standard: The tilt of 1st Curtain edger should be within 0.3mm.

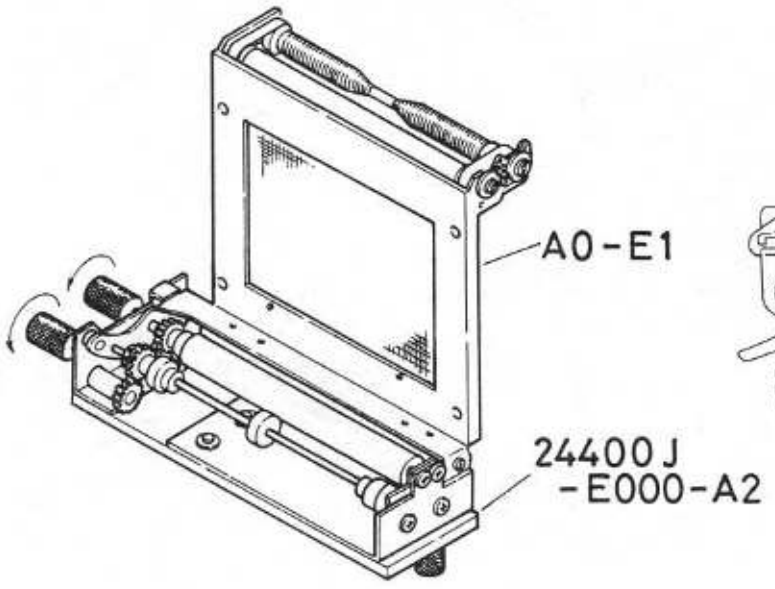


Fig. 18

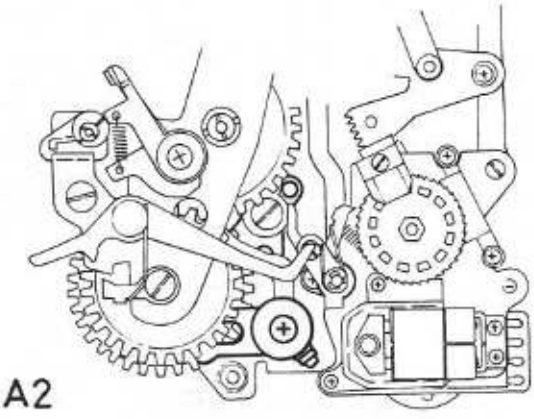


Fig. 19

16. Shutter block assy. A0-E1

16-1 After finishing Paragraph 15, set 2nd curtain edger on the scribed line and set 1st Curtain to be appered 1 - 1.3mm from 2nd Curtain edger.
Tools: Thickness gauge for Shutte curtain. 24400N-E35A

16-2 Set Wind mech. block in the coked condition. Refer to Fig. 19.

16-3 Confirmation: Both the curtain gears must be hooked by Curtain hook levers. The curtain gears can be checked as follows:
1st Curtain gear ----- It can be seen.

2nd Curtain gear
1. It is very difficult to see 2nd Curtain gear. So push 2nd Curtain hook lever toward the body casting.
2. With remaining above condition make sure the curtain gears move only its play.

16-4 Place Shutter block assy. (A0-E1) on Body and then fix it with the four screws (CSS1.7x5.5 x4) temporarily.

16-5 Move Shutter block assy. up or down so that both the curtain gears engage with the shutter curtain pinion gears approx. 2/3.
* In case Shutter block assy. does not move, apply a solvent (KETON or ACETON) on Retainer nut (E42).

16-6 Insert E000 installing jig 0.6mm and 0.4mm (24400J-E000-A3) into the specified places as shcwn in Fig. 21, then push 0.6mm jig toward the wind mech. block side. Refer to Fig. 21.
While doing so, tighten the four screws (CSS1.7x5.5 x4) equally.

16-7 Remove Curtain installing jig (24400J-E000-A-3) from Shutter block assy.

16-8 C115 Installing seat collar
16-9 CNM1.7x4.5

Note: Tighten the screw (CNM1.7x4.5) while engaging the curtain gears and the shutter curtain pinion gears approx. 2/3. Refer to Fig. 20.

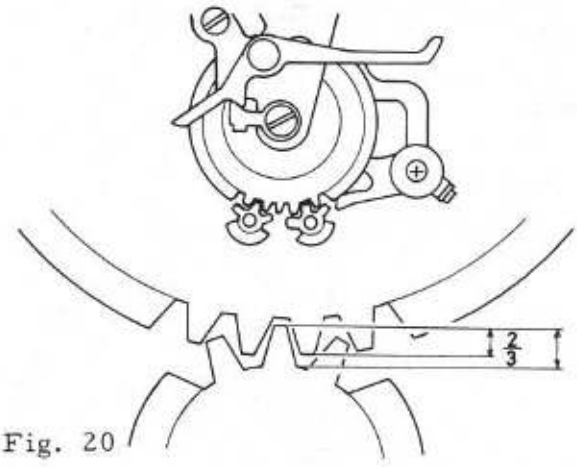


Fig. 20

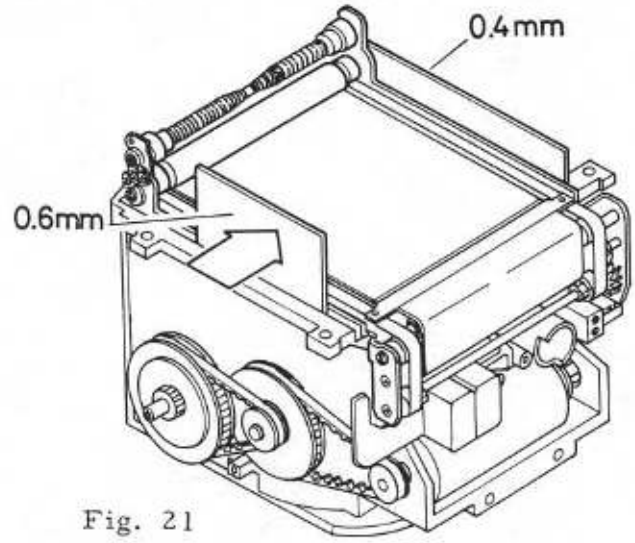


Fig. 21

16-10 Release the shutter by turning Timing wheel (0-D15) counterclockwise.

17. Confirmation and Adjustment: The start position of 2nd Curtain and Overlapping of 1st Curtain and 2nd Curtain.

17-1 Set the shutter in the cocked position.

17-2 Apply 3V (Polarity is not necessary to concern) to the lead wires coming from Magnet (S101) to make the shutter stays open.

17-3 Confirmation:
Make sure that the edger of 2nd Curtain positions on the scribed line.
Standard: 0.3mm

17-4 Adjustment: 2nd Curtain start position can be adjusted as follows:
1. Loosen the nut (left-handed screw) by using the tools. Refer to Fig. 22 on the next page. Tools: 24400K-E7-A
24400K-E13-A
2. Adjust 2nd Curtain start position by turning the eccentric screw.

3. After the adjustment, apply a drop of ARONTITE. Refer to Fig. 23.

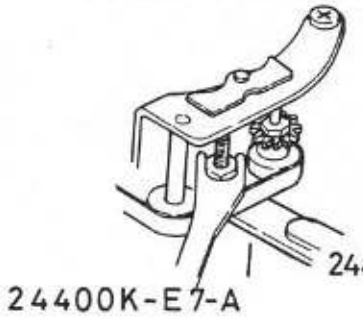


Fig. 22

Adhesive: Arontite

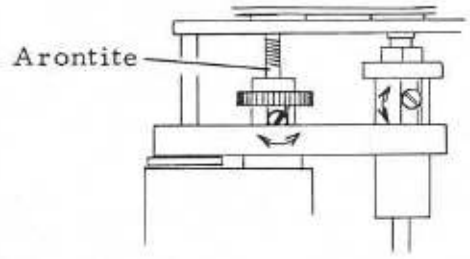


Fig. 23

17-5 Confirmation and Adjustment: Overlapping of 1st Curtain and 2nd Curtain

1. Turn OFF the power, then set the shutter in the cocked position.

Note: Do not cock the shutter with the power ON. You may loose the holding strength of the Magnet (S101).

2. Make sure that the edger of 1st curtain appears from 2nd curtain edger 1.0 - 1.3mm by using Thickness gauge for Shutter curtain (24400N-E35-A). Tools: Thickness gauge for Curtain 24400N-E35-A
3. Loosen the nut by using the tools 24400K-E7-A and 24400K-E13-A, adjust the position of the edger of 1st Curtain by tuning the eccentric screw of 1st pinion gear. Tools: 24400K-E7-A 24400K-E13-A
4. After the adjustment, tighten the nut and then release the shutter several times. Check its overlapping in the same manner as mentiond above.

18. Relay block T700

18-1 When installing Relay block (T700), seat it to the Motor side so that it does not touch 1st pinion gear.

18-2 CNL-D1.7x2.5
18-3 A71 Relay block retainer screw

19. Installation of Film chamber to Body.

19-1 Remove Wind actuating lever retainer screw (B173), Seat adjusting lever spring (B162), Wind actuating collar (B172), Wind actuating lever assy. (0-B159) and Grip pin B (B8) on Film chamber.
Tools: 24400K-B7, B8

Installation of Film chamber
* Set the shutter in the cocked position.

19-2 Attach Film chamber to Body with taking care of the engagement of Brake lever (0-D108) and Mirror arm left assy. (0-A9).

19-3 CNS2.3x6.5 x3 Adhesive: Apply Threebond 1405D on the head of screw.

19-4 I16 Lead wire retainer F Adhesive: Pliobond

19-5 A72 Shutter block retainer plate

19-6 CNS2.3x7.5

19-7 CNL-D1.7x2.5

Note: 1. Tighten the screws (CNS2.3x6.5 and CNS2.3x7.5) equally.
2. When installing Shutter block retainer plate (A72), keep the space gap of 0.1mm between the side plate of Shutter block and Shutter block retainer plate (A72).

20. 1st Curtain cover E43

20-1 Pull 1st Curtain cover backward so that it does not touch the spring of 1st Shutter curtain.

20-2 CNS1.7x2.5 ------located right side as seen from Film chamber.

20-3 B29 C-S selecting installing screw --- located left side

21. Wind actuating lever assy. 0-B159

* Set the shutter in the cocked position.

21-1 B162 Set adjusting lever spring

21-2 B172 Wind actuating lever collar

21-3 0-B159 Wind actuating lever assy.

21-4 B173 Wind actuating lever retainer screw ---- left-handed screw

22. Adjustment: Position of Hold lever. C116

* Set the shutter in the cocked position.

22-1 Attach Film back to Body.

22-2 Set the Hold lever (C116) by pushing up it by a finger as shown in Fig. 24 and then make the 0.2 - 0.3mm clearance between B163 and 0-B159 by turning the eccentric screw as shown in Fig. 24.
Adhesive: Threebond 1405D

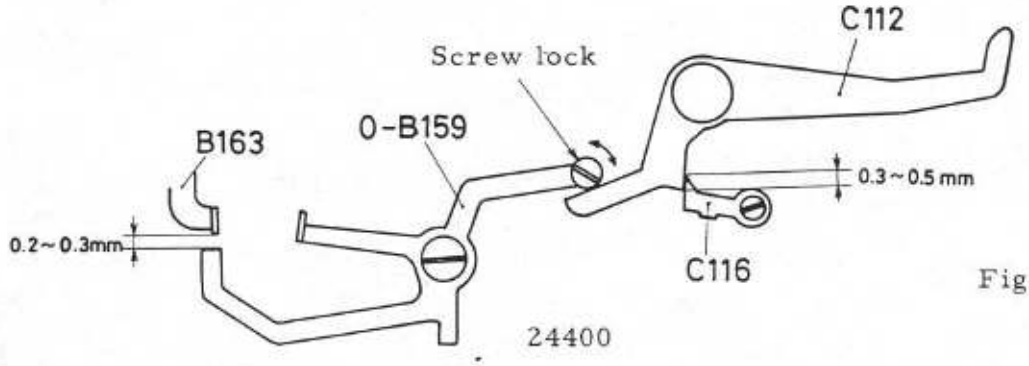


Fig. 24

22-3 Remove Film back from Body.

22-4 B8 Grip pin B Tools: 24400K-B7, B8-A2
Adhesive: Arontite

23. Cell frame assy. 0-A84

* Shutter is uncocked position.

23-1 Pass through the lead wires from the photocell into the slot of the timing belt side, and then install Cell frame assy. (0-A84) to Body so that the pins of Shutter block plate fit into the holes of Cell frame assy. (0-A84).

* Shutter is cocked position.

23-2 A83 x2 Light seal tape

23-3 A82 x2 Cell frame retainer screw

24. Adjustment for the position of the Mirror seat when the 1st curtain is released.

24-1 Set the shutter in the cocked position, and then supply 3V to Shutter magnet (S101).

Note: Cocking the shutter after supplying the voltage to Shutter magnet causes its holding strength weak.

24-2 Confirmation:
With lightly holding Mirror seat by a finger, release the shutter. Let Mirror seat go up gradually, make sure that 1st Curtain trips when the top surface of Mirror seat reaches in the range as shown in Fig. 25.

24-2 The adjustment can be made by turning Mirror flip-up collar (A14).
Adhesive: Arontite

Note: 1. There should be more than 0.1mm gap exist as shown in Fig. 26.
2. Cock the shutter after turning off the power.

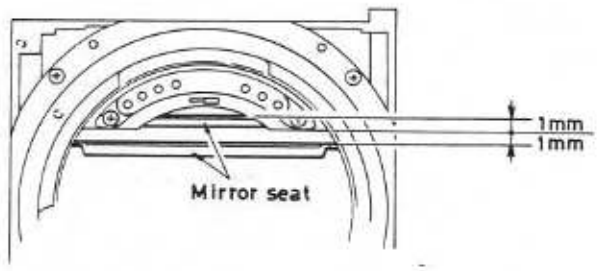


Fig. 25

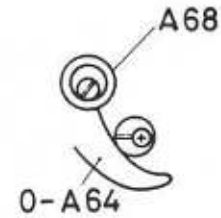


Fig. 27

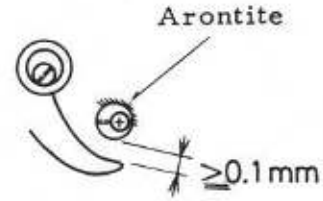


Fig. 26

25. Adjustment: Mirror brake.

The adjustment procedures are explained below.

25-1 Adjustment for the engagement of the sector gear of Mirror arm and Mirror brake seat assy. (0-D101).

* The backlash of those gears is 0.5 - 1 teeth.

1. Loosen the two screws so that the Mirror brake seat assy. (0-D101) can be moved easily.
2. Swing the Mirror brake seat assy. (0-D101) by making the screw (CSS 1.7x2) work as a pivot while turning the 1st gear assy. with a finger, so that the 1st gear can move 0.5 - 1 teeth.
3. The backlash of 0.5 - 1 teeth should be observed both when the Mirror is flipped-up and downed position.
4. After the adjustment, tighten the two screws firmly.

25-2 Set the eccentric screw on Release lever assy. (0-B239) as shown in Fig. 28.

25-3 Hook the Brake lever spring (D111) at the highest step to increase its spring tention.

25-4 Mirror brake adjustment for the flip- up direction can be made as follows:

1. Set the shutter in the cocked position.
2. Supply the 3V to the lead wires coming from the Shutter magnet (S101) then release the shutter to make the shutter stays open.

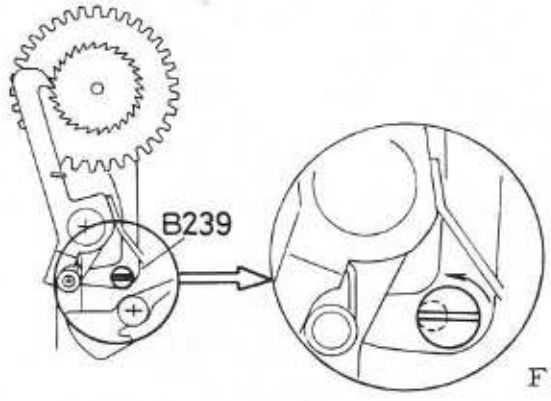


Fig. 28

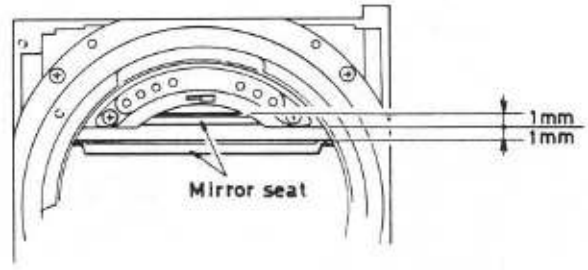


Fig. 29

3. Turn the eccentric screw as shown in Fig. 30 so that the mirror brake starts working in the range as shown in Fig. 29.
   Tools: 231K-E91-A
4. Free 2nd curtain by turning off the power.

25-5 Adjustment: Cancellation of Mirror brake.

Turn the eccentric screw as shown in Fig. 28 to make the clearance of approx. 0.15mm as shown in Fig. 31.

Note: Turn the eccentric screw in the direction of the arrow as shown in Fig. 28.

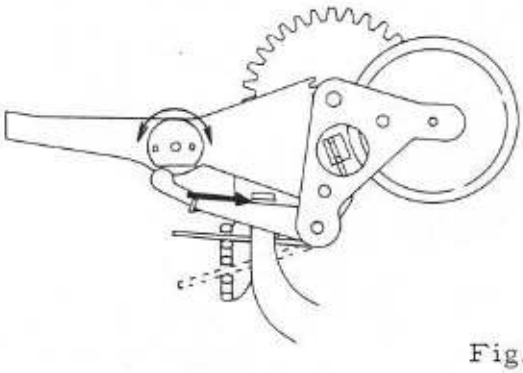


Fig. 30

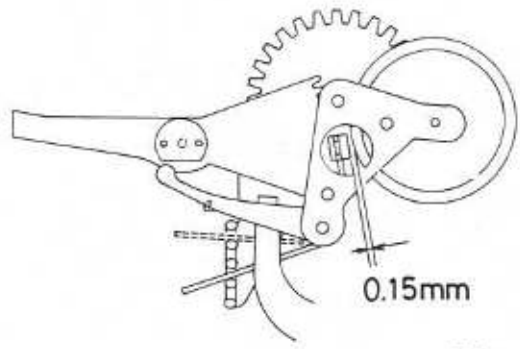


Fig. 31

25-6 Confirmation:
After the adjustment, check the function of the mirror brake as follows:

1. Set the shutter in the coked position.
2. Supply the 3 V to the magnet.
* If 1 and 2 is reversed, the Magnet (S101) may loose the holding strength
3. Make sure that there is the gap as shown in Fig. 30.
4. Let the Mirror seat go up gradually. Make sure that the position where the Mirror brake starts working when 1st curtain is released. It can feel with a finger.
6. Turn off the power to trip 2nd curtain.
7. Make sure that there is the 0.15mm gap as shown in Fig. 31.
8. Apply a screw lock agent on the eccentric screw.
Adhesive: Aron-alpha
Threebond 1405D

25-7 Re-position the Brake lever spring (D111).

25-8 Adjustment : Adjust the engagement of the Latch lever (B213) as follows:

1. Attach the Film back to the Body Cocked the Shutter.
2. Set the Counter cam assy. (0-B104) as shown in Fig. 32-1 A.
3. Set the Wind actuating lever assy. (0-B159) at the lowest part of the Film advance restriction cam gear assy. (0-B137) as shown in Fig. 32-1 B.
4. Make sure that the tip of the Latch lever do not touch the Friction ratchet wheel (B204). Be sure to turn B204 completely.
5. Adjust the clearance to be 0.05 - 0.15mm by turning the Adjusting cam (B216). Refer to Fig. 32-2.

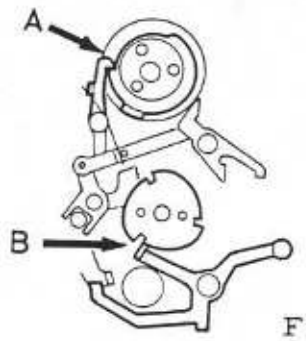


Fig. 32-1

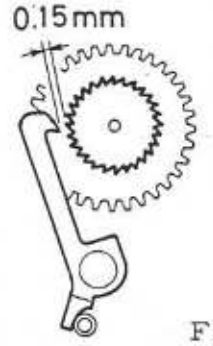


Fig. 32-2

26. Adjustment: Mechanical back

- Dial gauge comparator
- Dial gauge
- Dial Gauge Bit DGB-244
- Block Gauge 24400N-A01-A
- Mount Block 24400J-A01-A

Standard Mechanical back 70.87mm ± 0.02

Adjustment

A129-00A	FB washer A (t=0.02mm)	00F	FB washer F (0.15mm)
00B	FB washer B (t=0.03mm)	00G	FB washer G (0.02mm)
00C	FB washer C (t=0.05mm)	00H	FB washer H (0.25mm)
00D	FB washer D (t=0.08mm)	00I	FB washer I (0.3mm)
00E	FB washer E (t=0.1mm)		

27. Prism and the related parts.

27-1 Slide the Focusing screen release lever (A124) to right as seen from the Mount.

27-2 Install the Focusing screen retainer frame into the Focus adjusting frame assy. (0-M4).

27-3 Hook the Focusing screen retainer frame spring (M12) to the Focus adjusting frame assy. (0-M4).

27-4 Install the Adjusting frame retainer spring left (M33) to 0-M4 so that the heigher side of M33 and M34 as indicated by the arrow point the Body mount. Refer to Fig. 33.

27-5 Install the assembled focusing frame to the Body.

27-6 CNL-D1.7x3 x4 / I12 Lead wire retainer D ---- tighten the screw in the center of the slots.

27-7 Couple the Focus adjusting lever (M14) with the Focus adjusting frame assy.

27-8 M29 x2 Focus adjusting screw

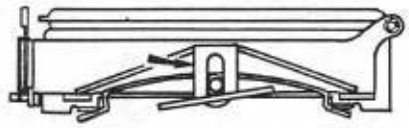


Fig. 33

28. Prism and the related parts.

28-1 L4 Prism

28-2 L3 / 0-M18 Condenser lens / Condenser holder assy.
28-3 CNL-D1.7x3 x4
28-4 Set T1.7x2.5 x2 --- left side Set T1.7x3.5 x2 --- right side
28-5 M26 Prism cover
28-6 M23 Prism retainer spring
28-7 M31 Prism retainer plate
* The flex of the Connector board (T1) must locate at the outside of the Prism retainer plate (M31).

28-8 CNL-D1.7x3 x2, A215 Lug plate
28-9 L2 Focusing screen
28-10 Peel off the Celophane tapes.

29. Adjustment: Optical axis of Prism

° Optical Axis Adjusting Tester (OAAT-244)

29-1 Mount the Body on the Optical axis adjusting tester.

29-2 Confirmation:
Projected lines and the standard lines on OAAT-244 should be matched.

Standard Vertical line ± 20'
Holizontal line ± 15'
Tilt of line within 1°

29-3 Adjustment:
Vertical line
It can be adjusted by the set screws located both the side of the Condenser lens holder assy. (0-M18).

Holizontal line
1. Protrude the screws (CNS1.4x2.8) approx. 1mm to the inside of the Condenser lens holder (0-M18).
2. Apply the adjusting washer (A129 x2) either the front or back side as shown in Fig. 34. But do not apply A129 thicker than 0.3mm.

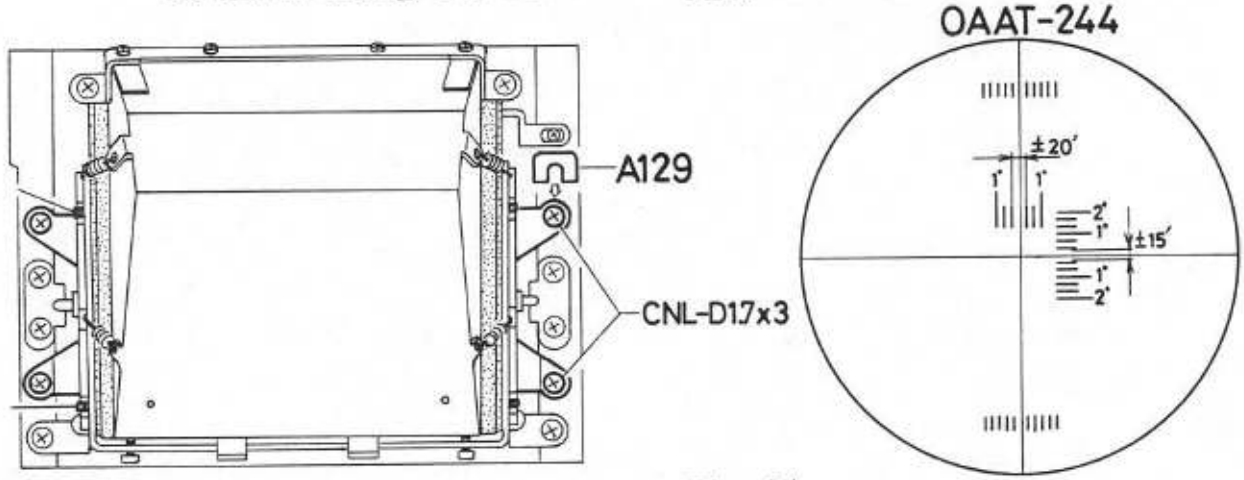


Fig. 34

30. Installation for the Relay lens.

30-1 Relay lens
30-2 CNS1.7x2.8 x2
30-3 Screw the Diopter adjusting ring into the Eyepiece all the way.

30-4 Screw the Eyepiece into the Relay lens all the way.

31. Adjustment: Optical axis of the Relay lens.

° Optical Axis Adjusting Tester (OAAT-244)
° Hexagon Driver (HD-M2)

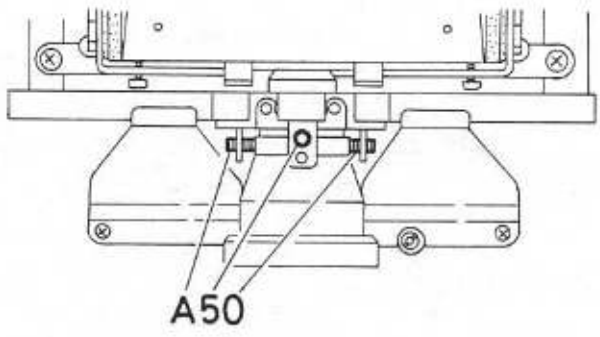
31-1 Mount the Body on OAAT-244.

31-2 Turn the Eyepiece and/or the Diopter adjusting ring until the projected lines appear cleary on the screen of OAAT-244.

31-3 Match both the lines by turning the Hexagon screw (A50).
Tools: Hexagon driver HD-M2

Standard Vertical line ± 20'
Holizontal line ± 15'
Tilt of line within 1°

31-4 Remove the Eyepiece from the Relay lens.



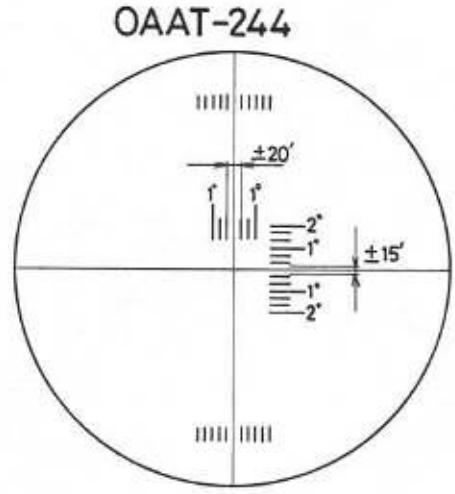


Fig. 35

32. Confirmation and Adjustment: Flare prevention frame

32-1 P8 Adjusting shaft
32-2 P9 Flare prevention frame

32-3 T-CNL-B1.4x2 x2 ----- tighten temporarily.
32-4 Screw the Eyepiece lens into the Relay lens block.

32-5 Make sure the Flare prevention frame is installed as shown in Fig. 36.

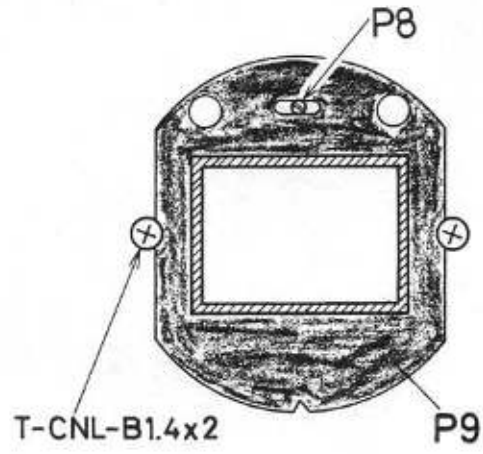


Fig. 36

32-6 The adjustment of the Flare prevention frame (P9) can be made as follows:

1. Remove the Eyepiece.
2. Loosen the two screws (T-CNL-B1.4x2).
3. Adjust the Flare prevention frame (P9) by turning the Adjusting shaft (P8) as shown in Fig. 36.
4. Tighten the two screws (T-CNL-B1.4x2).
5. Install the Eyepiece.
6. Make sure that the position of P9 is adjusted as shown in Fig. 36.
7. After the adjustment, apply a drop of Pliobond on the screws.

33. Adjustment: Focusing

° Focus Master Lens for 244 II (ML-244-II)
° Collimator

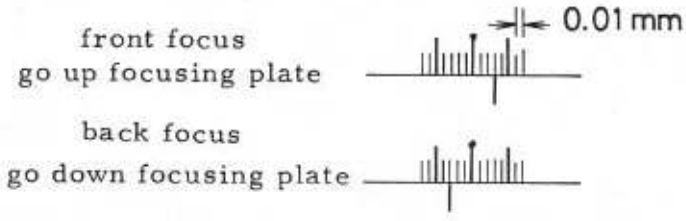


Fig. 37

33-1 Install the Guide collar (P18) and the Restriction screw(P15) to the Eyepiece To adjust the diopter of th Body without the Lens, direct the Body to face a bright / plain color background, then rotate the Diopter ring to a point whereby the border-line of the microprism and matte field can be seen most clearly. Adjusting is generally made easier when the Focusing screen image is blurred or out of focus.

33-2 Mount the Focus master lens for 244 II on the Body.

33-3 Make sure that the Focusing screen retainer frame spring (M12) are hooked at the correct postisions and then adjust the focus by turning the Focus adjusting screws (M29 x2) and the screw (CNL-F1.7x4).

M29 x2 ----- Eyepiece side
* Turning it clockwise lowers the Focusing screen.

CNL-F1.7x4 ----- Mount side
* Turning it counterclockwise lowers the Focusing screen.

Standard ± 0.03mm

34. Screw lock agent for the View finder parts.

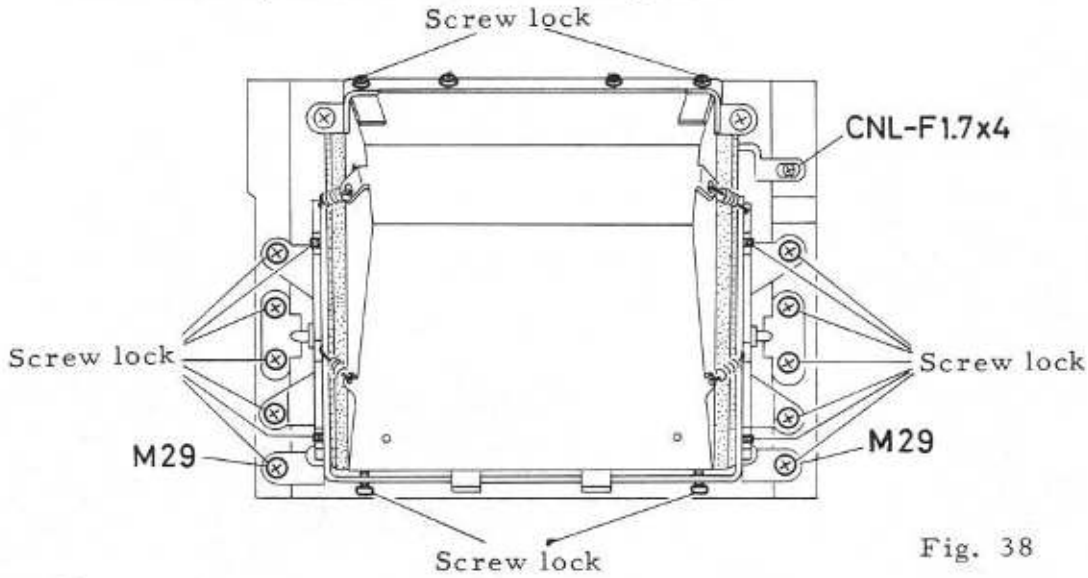


Fig. 38

35. Preview lever and the related parts.

35-1 C151 Preview lever installing plate screw A
35-2 Preview lever block.
35-3 CSS1.7x3 x2

35-4 Solder the purple lead wire (No. 16) on the switch.
35-5 Confirmation:
Make sure that the Preview lever SW turns ON and OFF surely.

36. Confirmation and Adjustment: The position of the Swing lever

- Master Seat Lens for 244 (MSR-244)
- Swing Lever Position Gauge (SPG-244)

36-1 Mount the MSR-244 on the Body mount.

36-2 Insert SPG-244 into the MSR-244.

36-3 Confirmation:
Make sure the position of the Swing lever as follows: Refer to Fig. 39.

1. The position of the Swing lever when the shutter is uncocked.
2. Its position when the shutter is cocked.
3. The shutter in the cocked position. Lightly push it up more further until it stops.

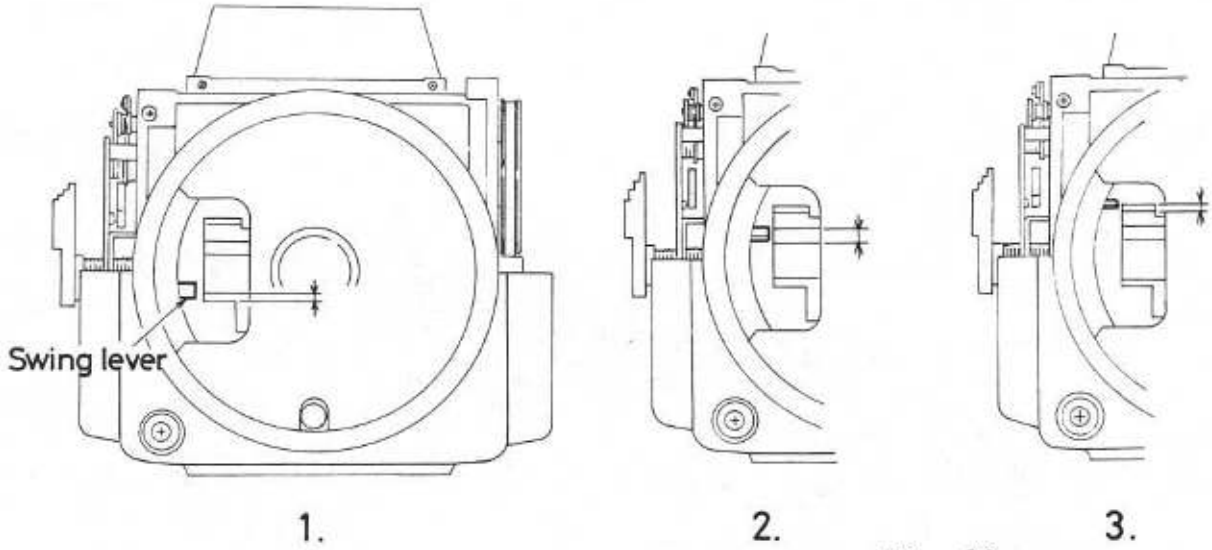


Fig. 39

36-4 Adjustment:
Adjust the position of the Swing lever as follows:

1. Loosen the screws (CNL-B1.4x2.2 x2) which are holding the Diaphragm actuating plate (C70). Then move C70 up or down in the proper position.
2. The Diaphragm actuating plate (C70) should be installed in parallel with the 1st swing lever (0-C67).
3. After the adjustment, mount the Standard lens f/2.8 75mm with setting the aperture at the maximum.
Operate the diaphragm blades several times by depressing the Depth of preview lever to make sure the blades are always closed and fully opened.

37. X SW I 100

* Set the shutter in the cocked position.

37-1 Solder the gray lead wire (No. 1) on the X SW (I 100).

37-2 I 35 X SW protector
37-3 I 100 X SW
37-4 CNM1.4x8 x2

38. Battery case assy. 0-A45

38-1 Pass through the two lead wires (Green No. 29 and Red No. 30) coming from X SW (I 100) the detch of the bottom side of the Battery case (0-A45).

38-2 0-A45 Battery case assy.
38-3 CNL-D1.7x2.5 x2

39. Soldering the Diaphragm control block S200.

39-1 Solder the four lead wires on S200 as shown in Fig. 40.

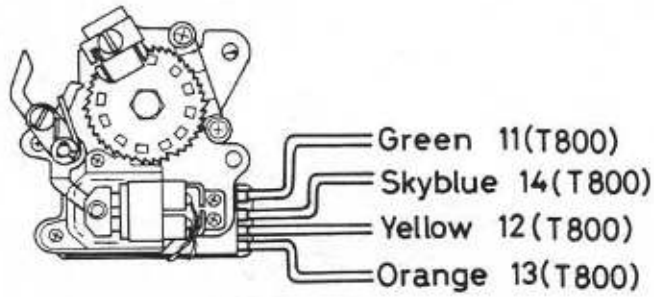


Fig. 40

40. Installation for the Support SW contact (I 4) and Soldering lead wires.

40-1 I 5 SW contact board
40-2 I 4 Support SW contact
40-3 I 6 x2 Insullation collar
40-4 CNL-D1.7x2.5 x2

40-5 Solder the three lead wires on the SW contact board (I 5).

40-6 I 11 Lead wire retainer C
40-7 CNS1.7x2

40-8 Confirmation:
Check the Suppor SW so called SW N, and the Mode SW so called SW F as follows:

1. With the shutter cocked, the Support SW must turn ON.
   With the shutter uncocked, the Support SW must turn OFF.

2. There should be approx. 0.2mm clearance as shown in Fig. 41 right when a 1.0mm washer is installed between the Film chamber casting and B16 as shown in Fig. 41 left.

3. The adjustment can be made by bending the contact piece of SW F.

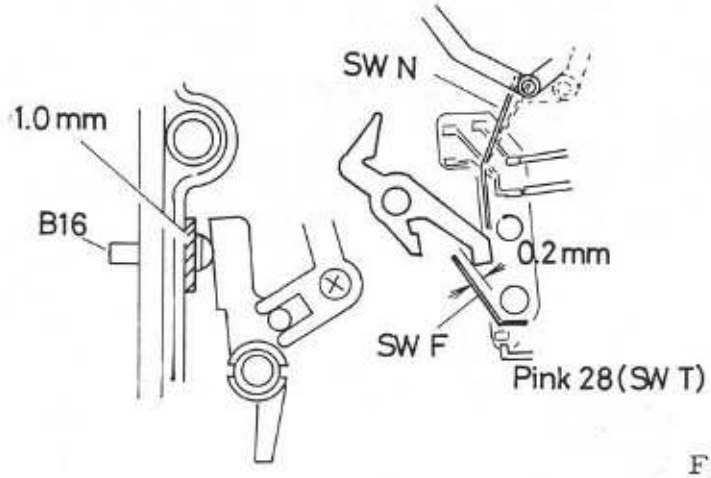


Fig. 41

41. MD board assy. T600

41-1 T600 MD board assy.
41-2 CNL-D1.7x3 ----- bottom side

41-3 Solder the sixteen lead wires on T600.

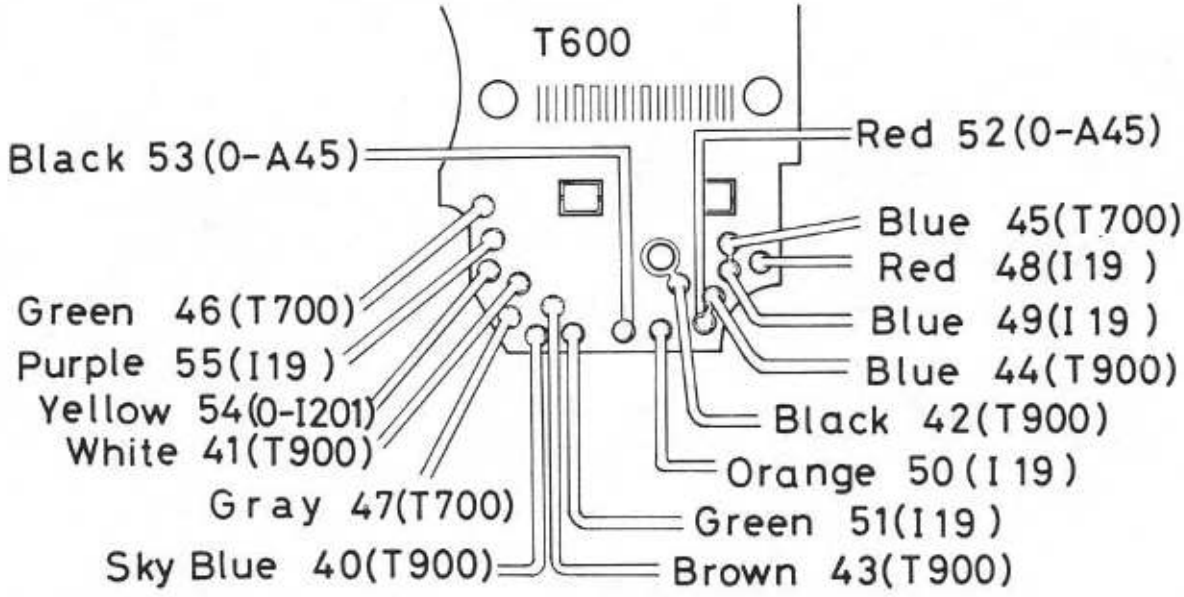


Fig. 42

42. Soldering the lead wires coming from the Motor.

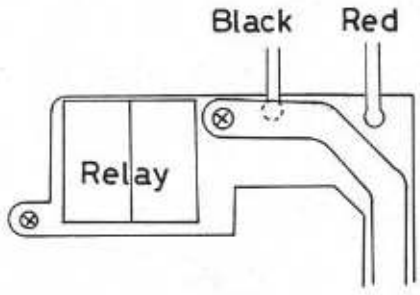


Fig. 43

43. Installation of C/S selecting disk SW assy.

43-1 0-I452 C/S selecting SW assy.

43-2 Confirmation:

Position C ------ SW must open
Position S ------ SW must close

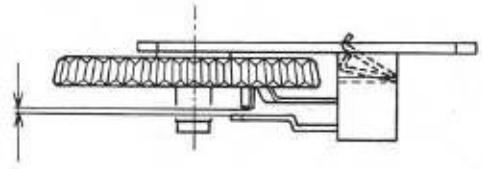


Fig. 44

43-3 CSS1.4x2.5 x3

43-4 Confirmation:
The bent part of SW contact must project from the top surface of C/S selecting SW plate as shown in Fig. 44.

44. Installation of P. C. board.

44-1 First, install the Photo sensor of P. C. board to the Cell frame (T7).
TX-CNL-B1.4x2.5 x2

44-2 W89 x2 (Delrin) / CNL-B1.4x1.6 x2----- located on the prism.

44-3 LCD ----- CNL-B1.4x2.5 x3

44-4 I9 / I8 / I36 / I37 / CNL-D1.4x2.5 x2 / CNL-D1.7x3
Retainer rubber / P. C. board retainer plate / Lead wire retainer H / Lead wire retainer I
* These parts are installed to the Timing belt side.

44-5 TX-CNL-D1.4x3
* Obtain the screw hole by turning the Timing wheel A (0- D8).

44-6 I3 x2 (Delrin) / CSS1.4x2.5 P. C. board retainer collar --- Install it on C/S selecting SW.
* The cut out side of the collar must position in parallel with P. C. board.

44-7 CNL-B1.4x1.6, A215 Lug plate

44-8 Insert the LED into the Viewfinder.

44-9 W2 (t=0.2), CNL-B1.4x2 x2
* Support the plate from the bottom with a finger when tightening the screws.

44-10 A53 / CNL B1.4x1.8 x2 X synch. relay P. C. board assy.

44-11 Insert the front part of the P. C. board (T800) into the Prism retainer plate (M31) and hold it with the two screws (CNS1.4x1.8 x2).

45. Soldering the seven lead wires on the left side of T800.

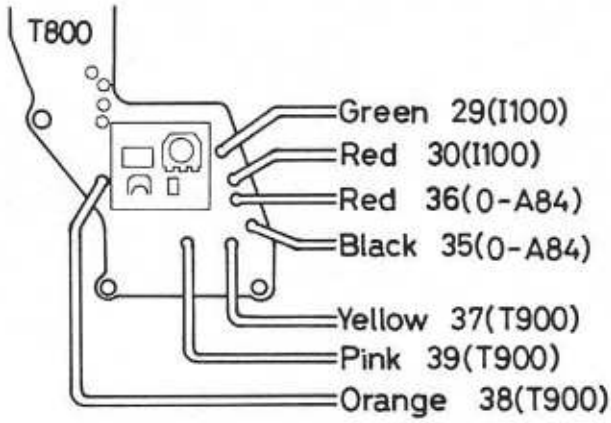


Fig. 45

46. Soldering the lead wires on T800 and T850.

46-1 Solder the nineteen lead wires on the P. C. board (T800).

46-2 Solder the four lead wires on the Relay P. C. board (T850).

46-3 Solder the two lead wires on the X synch. relay P. C. board.

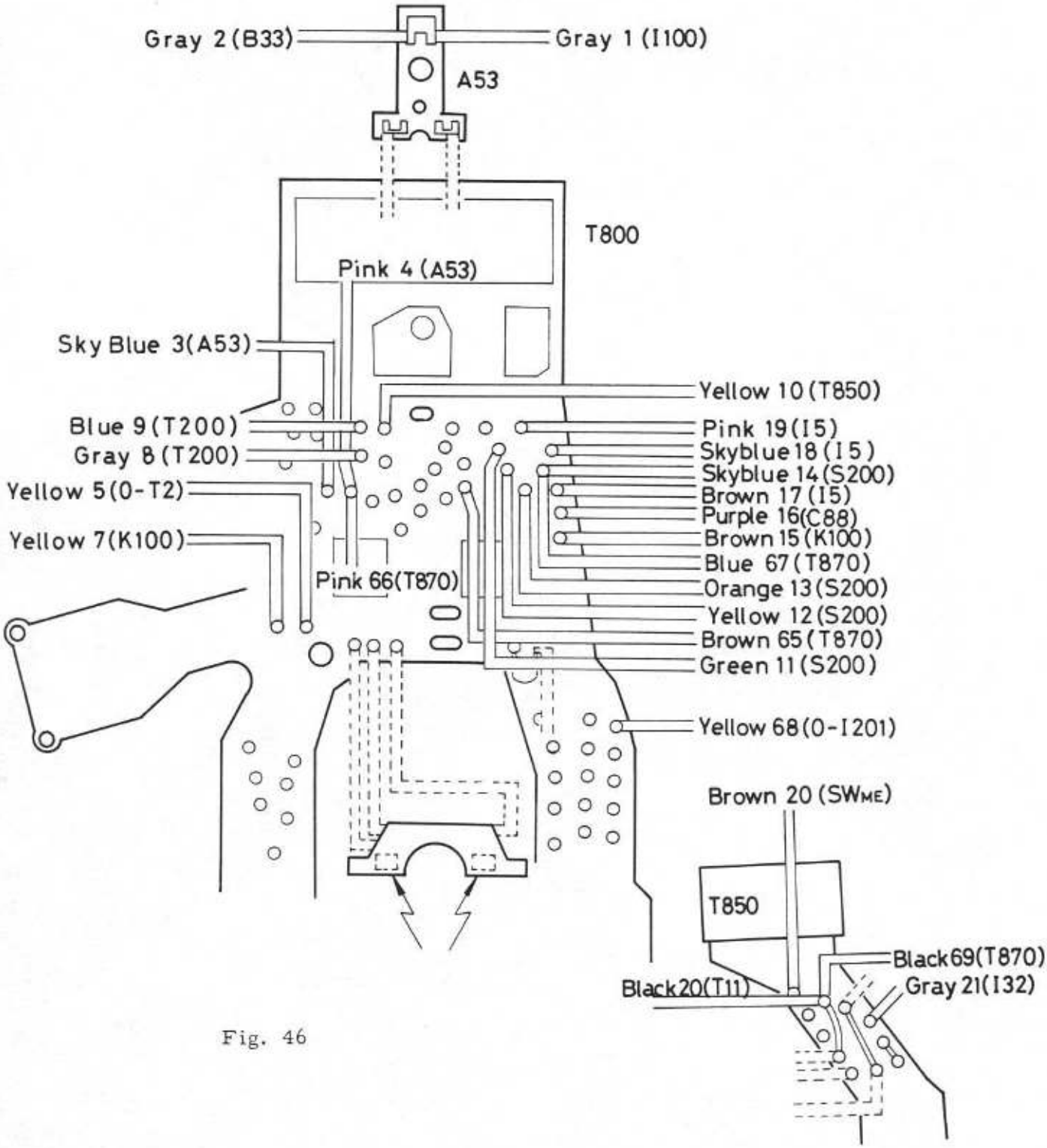


Fig. 46

47. Installation and Adjustment of Wind completion SW.

47-1 B34 / B35 Insulation seat / Dust prevention seat
Adhesive: Pliobond

47-2 B5, CNS1.7x2.5 Switch adjusting cam

47-3 W3 (t=0.4) Adhesive: Pliobond

47-4 0-I201 Wind completion SW assy.

47-5 I14, CNS1.7x3, B237 Lead wire retainer B, Film winding seat retainer screw

47-6 Adjustment:

1. Set the Count starting lever (B124) on the lower part of the cam as shown in Fig. 47-1
   At this time, the gap between the SW contact wire and the Insulation collar (I203) should be remained as shown in Fig. 47-2.

2. Install the 0.5mm thickness gauge as shown in Fig. 47-2. But in servic you can use a piece of 0.5mm thickness washer or equivalent.
   At this time, the Wind completion SW must open.
   And when removing the washer, the Wind completion SW must open more wider.

3. The Wind completion SW must close when the 0.9mm thickness of washer is installed as shown in Fig. 47-3.
   The adjustment can be made by turning the Switch adjusting cam (B5).

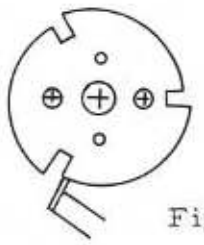


Fig. 47-1

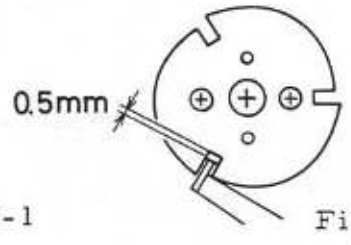


Fig. 47-2

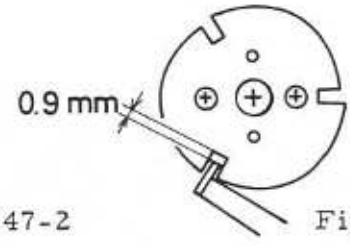
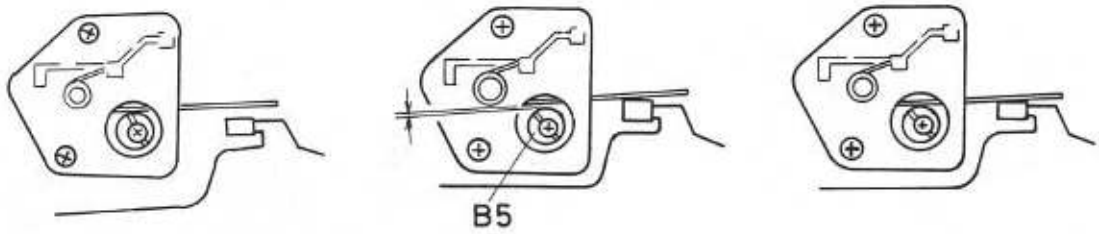


Fig. 47-3



48. Adjustment: Shutter curtain speed

- Shutter tester 7PE-25A3
- Shutter tester 7DF-50A1
- Battery Adapter Grip BAG-244

48-1 Install the Bottom cover temporarily.

48-2 Attach the Battery adapter grip to the Body.

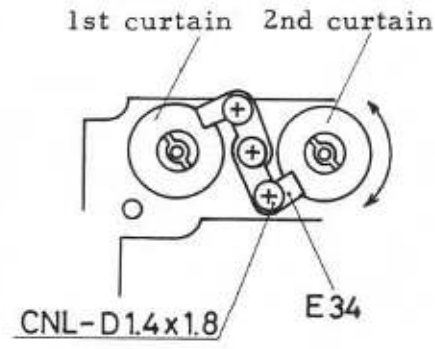


Fig. 48

48-3 Set the C/S selecting disk to "S" and make sure LCD is displaying M1 000.

48-4 Adjustment:

1st curtain speed 11. 95 ms ± 0.1 in 37mm distance.

2nd curtain speed 12. 05 ms ± 0.1 in 37mm distance.

48-5 Adjustment:
To adjust the curtain speed, loosen the screw which is holding the curtain shaft to be adjusted. Refer to Fig. 48.
Then turn the curtain shaft by using a minus head screw driver.
Turning it clockwise increases the shutter curtain speed.
After the adjustment, apply a screw lock agent on the screw.
Adhesive: Threebond 1405 D

* Adjust the 1st curtain speed to be faster than that of the 2nd curtain by 0.05 - 0.1ms.

49. Adjustment: Shutter curtain bounce

49-1 Adjustment: 1st curtain bounce 180 - 200 g/cm

* Set the shutter in the cocked position.

1. Measure the brake strength of 1st curtain bounce prevention lever assy. (0-C141) by using a Dial tension gauge DT-300.

Note:

- Try to measure the brake strength more than three times and read its minimum value when the Bouce prevention lever moved more than 2mm.
- A Tension gauge must set to the position as shown in Fig. 49. If not, it causes error readings.
- After the measurement, be sure to return the lever its original position.

2. The adjustment can be made by turning the Spring tension adjusting nut (C137).

Clockwise direction ----- weak
Counterclockwise direction ---- strong

49-2 Adjustment: 2nd curtain bounce 150 - 180 g/cm

* Set the shutter in the cocked position.

1. Measure its brake strength by using a Dial tension gauge.

Note:

The same cares are required as mentioned in the note of 1st curtain bounce.

2. Adjustment can be made by replcing the Bounce prevention adjusting collar (C179), or adding W6 to or removing it from the 2nd curtain bounce prevention lever.

C179-00A	t=1 mm
00B	t=1.5 mm
00C	t=2 mm
00D	t=2.5mm

3. After the adjustment, release the shutter several times and measure its brake strength again.

49-3 Apply a screw lock agent as shown in Fig. 50.

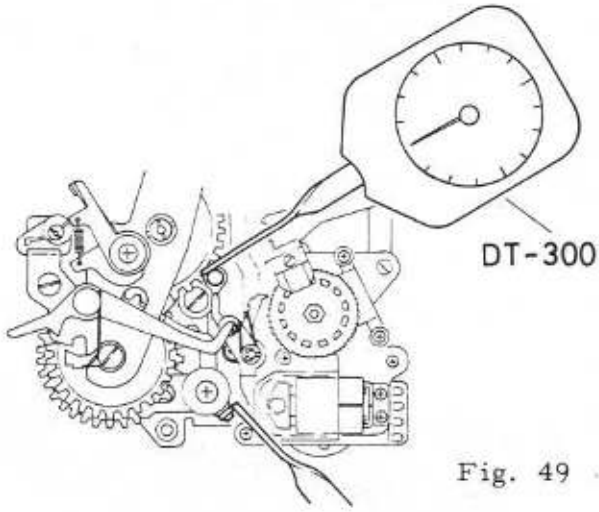


Fig. 49

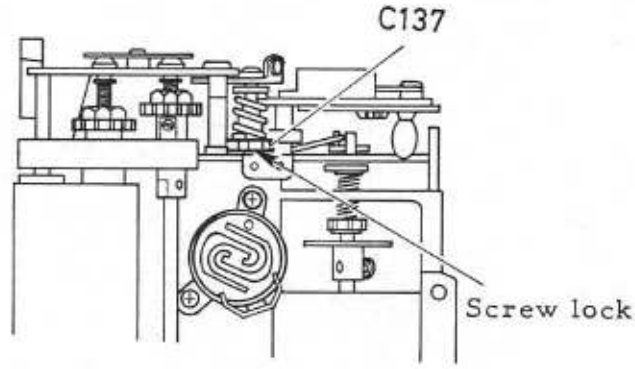


Fig. 50

50. Adjustment: Shutter speed

- Shutter tester 7DF-50A1
- Shutter tester 7PE-25A3
- Light Receiving Unit (LRU-244)
- Battery Adapter Grip (BAG-244)

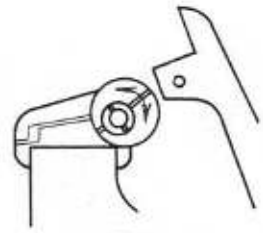


Fig. 51

50-1 Peel off the Dust prevention sheet (A86) from the Timing SW.

50-2 Adjustment:
Make sure the LCD is displaying M1000.
* The mode selecting lever of the Battery adapter grip should not be depresse

50-3 Adjust the shutter speed to be 1.00ms - 1.10ms by turning the eccentric par of the Timing SW as shown in Fig. 51. Tools: 24400K-C156-A

50-4 Turn off the power of the Battery adapter grip and check the mechanical shutter speed.
Mechanical shutter speed approx. 20 ms

50-5 Glue the Dust prevention sheet (A86) on the Timing SW.

51. Confirmation: Check the function of each switch.

51-1 Attach the Battery adapter grip to the Body and set the mode selecting SW lever to the depressed side.
The LCD of the counter must desplay "1" after releasing the shutter.

51-2 Turn the Multi-exposure ring in the arrow direction , and then release the shutter.
Make sure the counter does not advance.
Release the shutter once more.
The multi-exposure ring must be re-set and the counter must advance.

51-3 Try to release the shutter while shorting the Film detecting SW so called SW K and the Body. The shutter should not be released.

51-4 Try to release the shutter while depressing the Depth of preview lever.
The shutter should not be released.

52. Confirmation and Adjustment: X synch. time lag.

- Shutter tester 7PE-25A3
- Shutter tester 7DF-50A1
- Battery Adapter Grip BAG-244
- Mode Selecting Equipment MSE-244

Standard X synch. time lag A --- must slower than 0.5ms
B --- must slower than 2.5ms

52-1 Insert the connector of the MSE-244 into the Relay P. C. board (T850) and set the lever of the MSE-244 to "MAN".
While depressing the MODE button, depress "UP" or "DOWN" button to set the LCD display "60". Refer to Fig. 52.

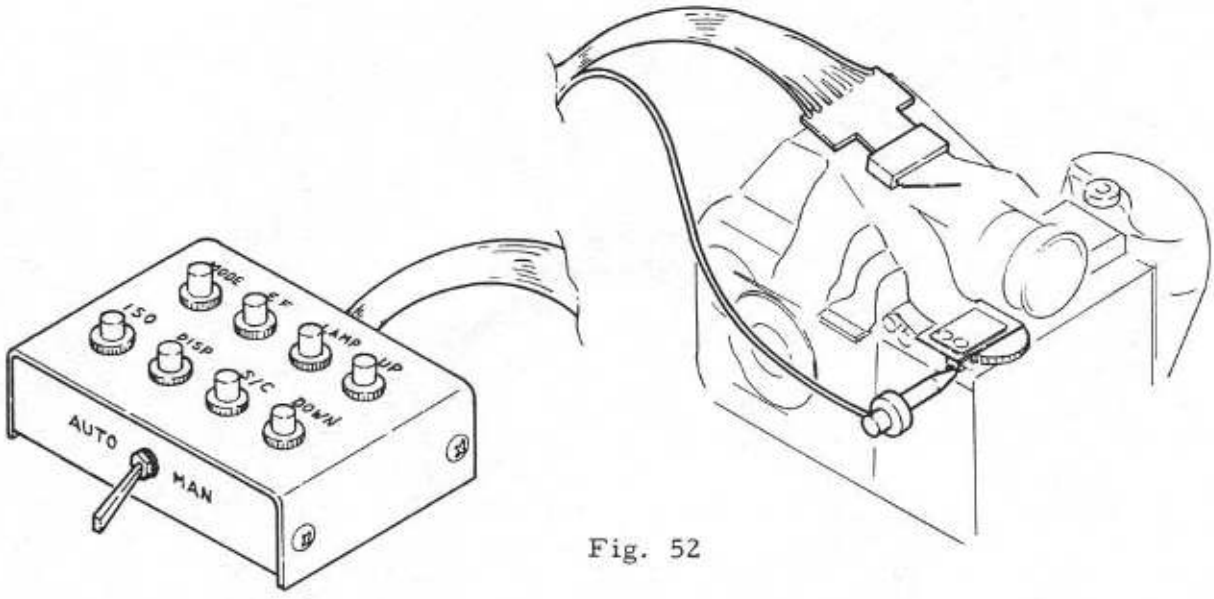


Fig. 52

52-2 Depress the function button 1 on the shutter tester and connect the two lead wires as shown in Fig. 53.
Attach the Light Receiving Unit for Manual to the Body.

52-3 X synch. time lag can be adjusted by bending the fixed contact of X SW (I 100

52-4 Confiration:
Lower the moving contact of TTL SW to make sure it opens before X SW closes. Refer to Fig. 54.

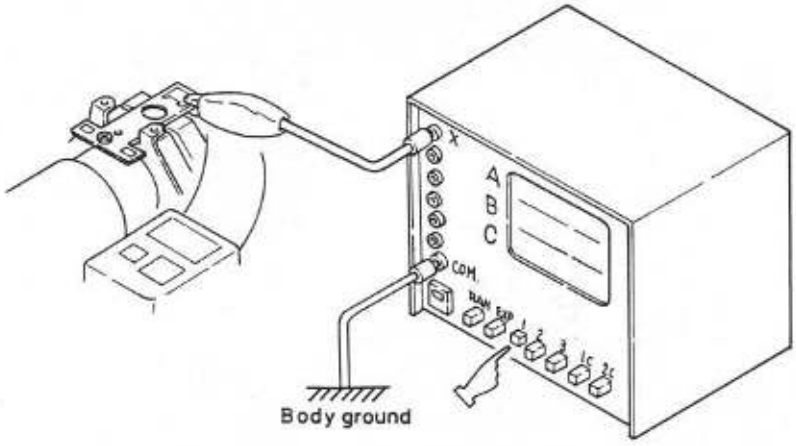


Fig. 53

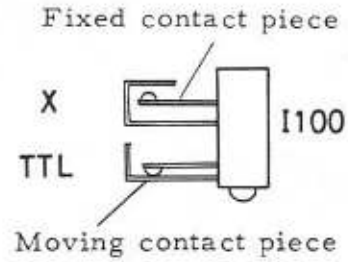


Fig. 54

53. Diaphragm-shutter synch. time.

- Diaphragm-shutter Synch. Time for 244 (DSST-244)
- Shutter tester 7DE-50A1
- Battery Adapter Grip (BAG-244)

* Make sure the shutter speed has being set at M 1000.

53-1 Attach the DSST-244 and the Light Receiving Unit to the Body and connect the leads as shown in Fig. 55.

Standard 65 - 95 ms

Channel A Diaphragm-shutter synch. time
Channel B Swing-lever velocity

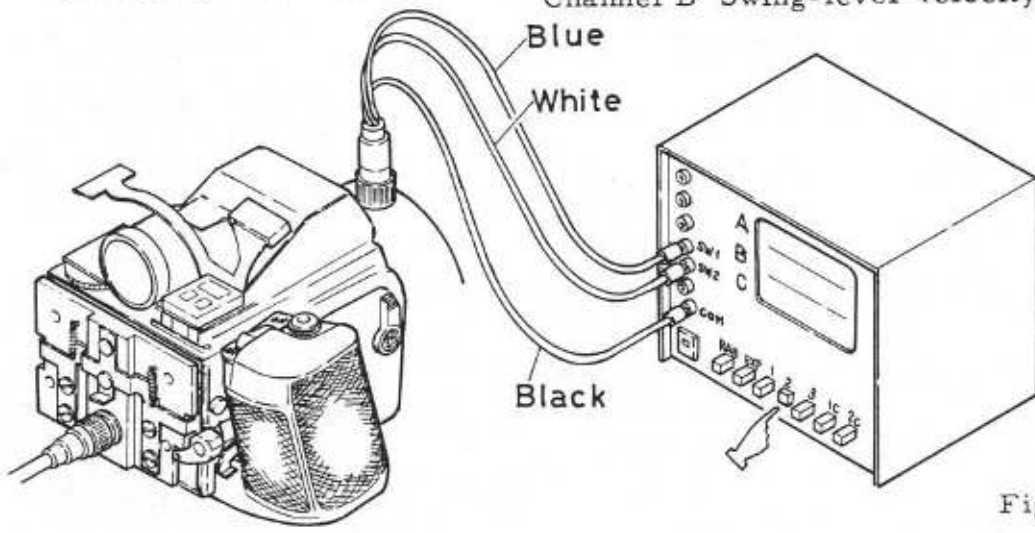
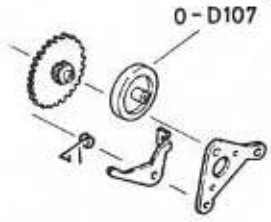


Fig. 55

53-2 Adjustment:
The adjustment can be made by replacing the Flywheel A assy.

0-D107-00A	Flywheel A	(Depth 0mm)
0-D107-00B	Flywheel B	(Depth 0.7mm)
0-D107-00C	Flywheel C	(Depth 1.3mm)

* 0-D107-00D has been initially used.



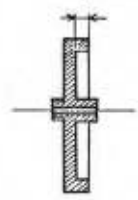


Fig. 56

53-3 If the Diaphragm-shutter synch. time cannot be established by replacing the Flywheel, another way of its adjustment is replace the Mirror up spring (C36). Replacing C36-00A with C36-00B increases it.

54. Adjustment: Swing-Lever velocity

- Diaphragm Shutter synch. - Time Checking Adapter for 244 (DSST-244)
- Shutter tester 7DF-50A
- Battery Adapter Grip (BAG-244)

54-1 Make sure the shutter speed has being set at M1000.

54-2 Mount the DSST-244 on the Body and connect its wires with the shutter tester as shown in Fig. 55.

Standard 46 - 56 ms

54-3 Adjustment:
The adjustment can be made by replacing washers and/or screws as shown in Fig. 57.

W1 thin one (increase) ←----------→ thick one (decrease)

T-CNS1.4x1.5 ←----- increase

T-CNS1.4x2

T-CNS1.4x3 decrease-----→

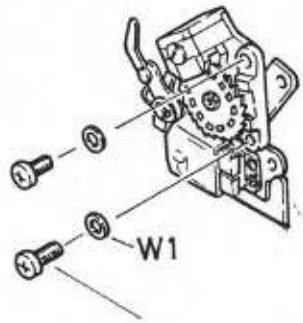


Fig. 57

55. Level Adjustmnet for Aperture control voltage.

- Master Lens for EE Check (MLEC-244)
- Occilloscope
- Mode Selecting Equipment (MSE-244)
- Battery Adapter Grip (BAG-244)

55-1 Install the Bottm cover and the Body covering right to avoid the Diaphragm control block (S200) receives unneccessary light.

55-2 Attatch the Battery adapter grip and set its mode selecting lever to the depressed position.

55-3 Mount the Master lens with "A" setting onto the Body.

55-4 Set the diplay of LCD to "Auto P" by using MSE-244.
* Be careful not to bend the connector part of the flex forcedly.

55-5 Connect the body and the Occiloscope as shown in Fig. 58.

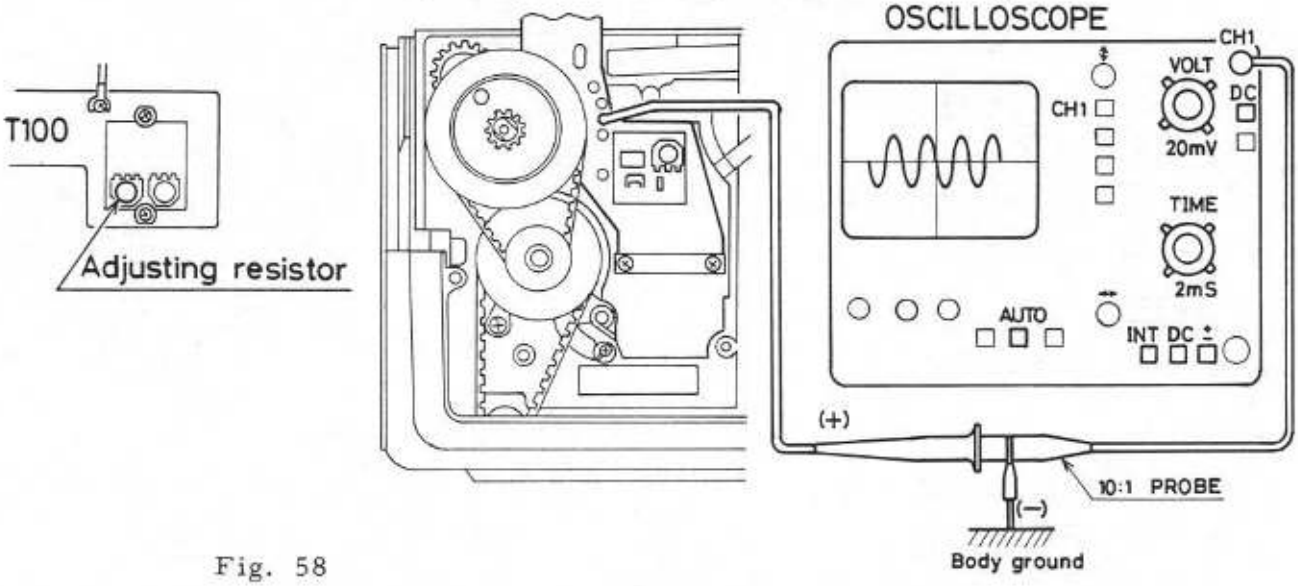


Fig. 58

55-6 Adjust the f/stop display of LCD to be smaller than f/2.8 by changing the ISO and / or the brightness of the light source.

55-7 Release the shutter. At this time, make sure that the output voltage is desplayed on the screen of the Occiliscope as shown in Fig. 58.

55-8 The adjustmnet can be made by turning VR as shown in Fig. 58.

Standard 450 mv ± 50mv

56. Adjustment: AV adjustment

° Diaphragm Shutter synch. - Time Checking Adapter (DSST-244)
° Mini-multi meter

56-1 Unsolder the two yellow lead wires (No. 5 and 7) from P. C. board.

56-2 Mount the DSST-244 onto the Body and adjust the resistance value of f-volume compensation VR assy. (0-T2) to be 3 kΩ

* After mounting DSST-244, turn it clockwise to eliminate the play which causes reading errors.

* The projected part of the DSST- 244 set the aperture coupling lever of the Body to "A" position instead of f/8.

56-3 After the adjustment, solder the two yellow lead wires at the original positions.

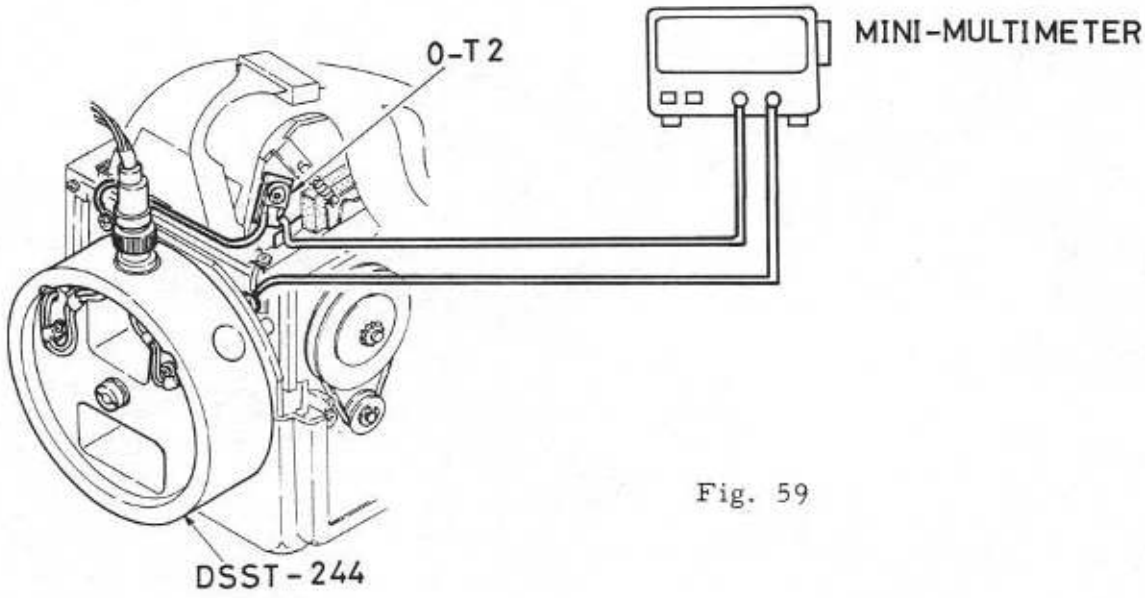


Fig. 59

57. Adjustment and Confirmation: Exposure value calibration.

° Shutter tester 7PE-25A3
° Light Receiving Unit for Auto (LRU-244 -A)
° Master Lens for EE Check (MLEC-244)
° Battery Adapter Grip (BAG-244)

57-1 Insert the Connect or board (T1) into the Relay P. C. board (T850)

57-2 Install the Bottom cover and the Top cover temporarily.
I2, I1 Retainer rubber, Connector retainer plate
57-3 A204. CSS1.7x3.5 Accessory shoe spring

* Connect a lead wire between the accessory shoe and the GND part of the Body to able to set desired shutter mode.

57-3 Install the Eyepiece temporarily.

57-4 Lens set aperture priority AE mode

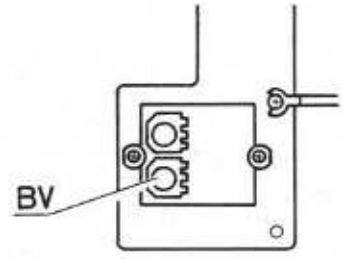


Fig. 60

- 7PE-25A3, LRU-244-Auto
- EV12
- ISO 100, EF 0
- Master Lens for EE Checker (MLEC-244) with f/8 setting

Standard 15.6ms (14.6 - 17.6ms)

Calibration:
At EV12, calibrate the shutter speed to be 15.6ms by BV adjusting resister as shown in Fig. 60

Confirmation:
After the adjustment, make sure the shutter speed is at EV16 and EV8 is within torelance.

EV16 0.72 - 1.4ms
EV8 179 - 345ms

57-5 Confirmation:
Body set aperture priority AE mode

* Set the Master lens to "A".

Standard 15.6ms (14.6 - 17.6ms)

57-6 Confirmation:
Shutter priority AE mode

- 7DF-50A1
- LRU-244-Auto
- Set the Master lens to "A".
- ISO 100 EF 0

If below shutter speeds are out of tolerance, re-check the AV adjustment on page 45 and the Level adjustment for Aperture on page 44.

Standard EV12, 1/30 (f/11) ------ ± 1 EV
EV8, 1/30 (f/2.8) ----- ± 1 EV
EV16, 1/250 (f/16) ----- ± 1 EV

57-7 Confirmation:
Programed AE mode

- Shutter tester 7PE25A, LRU-244-Auto
- ISO 100 EF 0
- Set the Master lens to "A".

Standard within ± 1 EV at each EV.

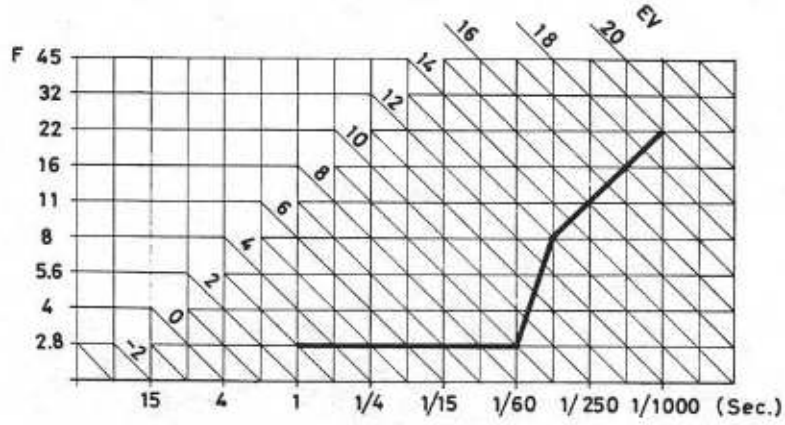


Fig. 61 **Programmed shutter diagram (ISO 100, 2.8/75mm)**

57-8 Confirmation:
Manual shutter mode
1. Push the FO button of the shutter tester 7PE-25A3.
2. Remove the Master lens from the Body.
3. Check a manual shutter speed respectively.

57-9 Confirmation: Shutter speed 60

57-10 Confirmation: B

58. Confirmation: Checking for the Mount connector pins

- FNO Cord Checker (FCC-244)
- Battery Adapter Grip (BAG-244)

58-1 Set the Body set aperture priority mode and then mount the FCC-244 on the Body.

58-2 Confirmation:
Make sure the LED display in the viewfinder varys properly as shown in Fig. 62 when the dial of the FCC-244 set to each number of position.

DIAL 10	DIAL 20	DIAL 30	DIAL 40	DIAL 50	DIAL 60
F 2 〜 F 3 2	F 2.5 〜 F 3 2	F 3.5 〜 F 3 2	F2.8 〜 F 4 5	Manual F-- 60 B	L S

Fig. 62

59. Confirmation: Ready Light Signal and Quench Signal

° RL and QS checker for 244 (RLS-244)

59-1 Supply the 2.4V to the RLC-244, positive goes the white lead and negative goes the black, make sure both the LCD and LED di splay the lightning mark and 60.
But no 1/60 LED in the viewfinder will be displayed even though the 2.4 V suppleied to the RLC-244 when the EX (exposure counter) has no LCD display and / or the Body is being set at B mode.

59-2 Quench signal (QS)
Approx. 2V of the output voltage will be measured at QS contact pin on the accessory shoe when the shutter is released at B mode.

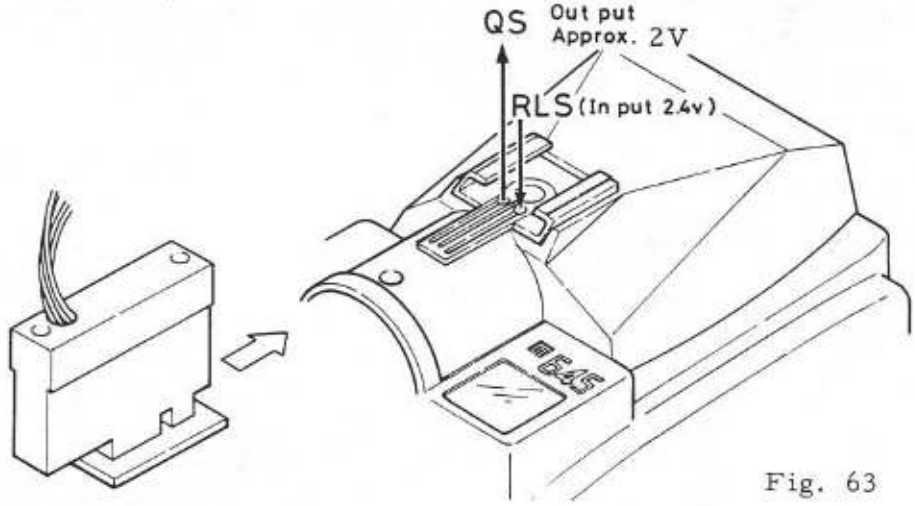


Fig. 63

60. Adjustment: TTL-ASL adjustment (Auto- Speed-Light).

° Shutter tester 7PE-25A3, 7DF-50A1
° Adapter for TTL-ASL (ATA-244)
° Master Lens for 244 (MLEC-244)
° RL and QS Checker for 244 (RLC-244)

60-1 Adjustment of TTL-ASL.

1. Set the Body to B, ISO 100 and EF0.
2. Attatch the RLC-244 to the accessory shoe and connect the lead wires to the shutter tester as shown in Fig. 64.
3. EV12. f/11

60-2 Adjustment:
Turn the Adjusting VR as shown in Fig. 65 to be 16.5ms

Standard EF 0 16.5ms (15.4 - 17.7ms)

Confirmation

EF +2	70.6 ms (57 - 88)
EF -3	approx. 2 ms

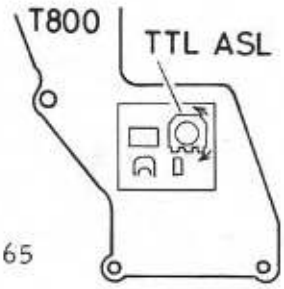


Fig. 65

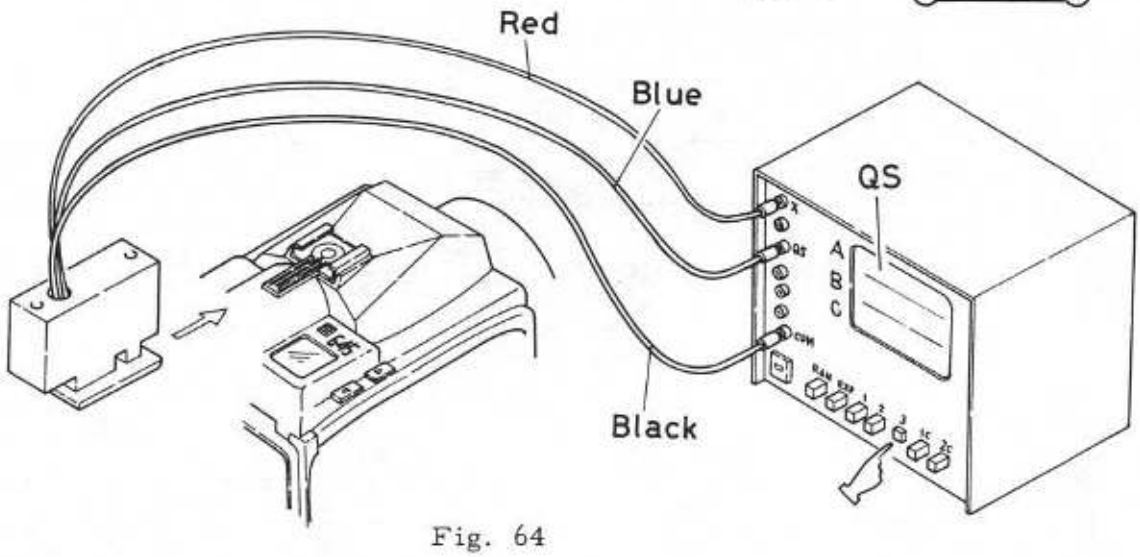


Fig. 64

61. Vertical socket seat assy. 0-D17

61-1	0-D17	Vertical socket seat assy.
61-2	CSM2x4 x5	

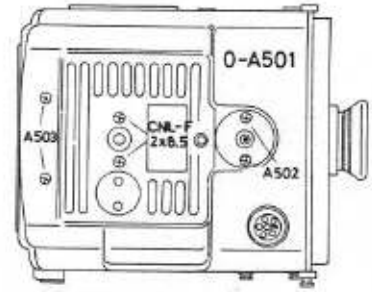


Fig. 66

62. Bottom cover and the related parts.

62-1	A44	Film winding knob installing seat
62-2	A21	Tripod seat
62-3	T400	Lithium battery
62-4	0-A501	Bottom cover assy.
62-5	A503 x2	Cover retainer screw B
62-6	A502 x4	Cover retainer screw A
62-7	A511 x2, CNL-F2x8.5 x2	Cover retainer collar

63. Cover plate left assy. 0-A27

63-1 Solder the gray lead wire (No. 58) on the Relay P. C. board (B33).

63-2	0-A24	Cover plate, left assy.
63-3	CSS1.7x1.8 x4	
63-4	CSS1.7x4 x2	

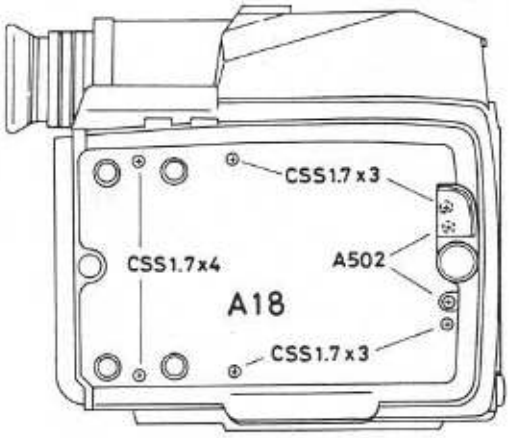


Fig. 67

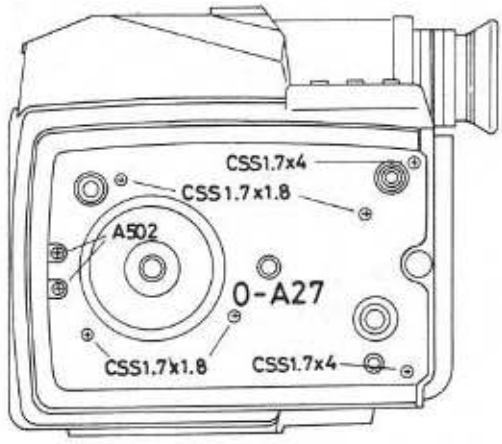


Fig. 68

64. Cover plate, right A18

64-1 CSS1.7x3 x4
64-2 CSS1.7x4 x2

65. Top cover related parts

65-1 A502 Cover retainer screw A

65-2 Adjustment:
If the gaps between the Top cover and the Bottom cover are observed, eliminate it by using the Adjusting collar (A517) and CNL-F1.7x2.5 instead of using the cover retainer screw B (A502).

A517 without notch Φ2.3
with one notch Φ2.4
with two notch Φ2.5

66. Diopter ring

66-1 Install the Diopter ring in the following procedures:

1. Screw the Diopter ring into the Eyepiece fully and unscrew only the Diopter ring about 1/2 turns.
2. Turn the Eyepiece and the Diopter ring together in the clockwise direction fully.
3. Turn the Eyepiece and the Diopter ring together in the counterclockwise direction until the tap hole on the Eyepiece can be seen.
4. Install the Guide washer (P18) and the Restriction screw (P15).

66-2 Confirmation:
Turn the Diopter ring clockwise and counterclockwise fully to make sure the dot between the arrows positions between 6 - 8 o'clock.

66-3	A216	Cover plate
66-4	P20	Eyecup

67. Body covering

67-1	A225	Top cover covering
67-2	A26	Body covering, right
67-3	A43	Body covering, left

DISASSEMBLY PROCEDURES II

Disassembly of Wind mech. block

° C1 assembly stand (24400J-C1-A)

1. Diaphragm control block S200

* Make sure that the Wind mech block is released . In other wards, the Charge lever assy. (0-C44) is not latched by the Release lever assy. (0-C62) as shown in Fig. 1.

Note:
To release the Wind mech. block without S200, push up the Release conrod (C66) while supporting the Mirror 2nd conrod assy. (0-C49) and the bottom side of the 1st swing lever assy. (0-C67) with fingers to prevent the Charge lever assy. (0-C44) from deformation.

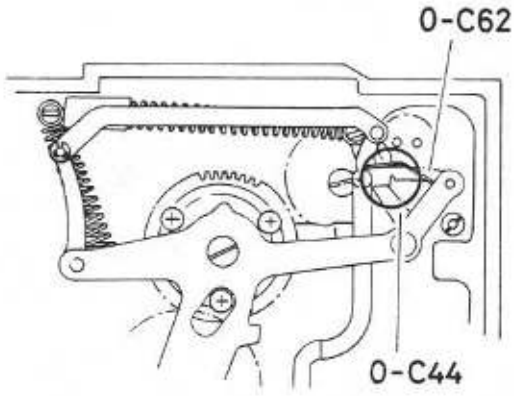


Fig. 1

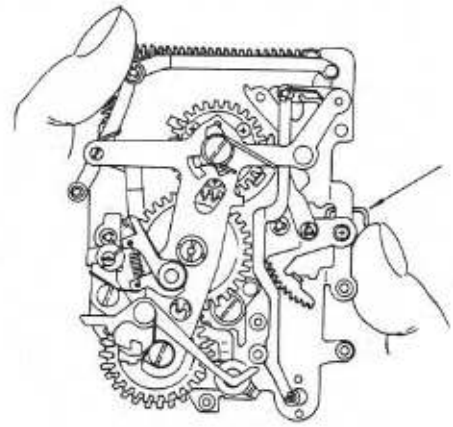


Fig. 2

1-1	C94	Swing lever spring
1-2	C93	Swing lever spring hook screw
1-3	CNL-D1.4x2.5	
1-4	S200	Diaphragm control block

2. Shutter winding seat assy. 0-C106

2-1	C183	Buffer spring
2-2	C182	Buffer lever retainer screw
2-3	C181	Buffer lever
2-4	C186	Friction spring
2-5	C118	Unhook it from the Hold lever shaft (C117).
2-6	C117 / C118	Hold lever shaft / Hold lever restitution spring
2-7	C116	Hold lever

2-8 Unhook the Timing SW lever restitution spring (C171) at the Timing SW lever assy. (0-C158) side.

2-9 C169 / C171 Timing SW lever restitution spring hook screw / Timing SW lever restitution spring

2-10 0-C106 Shutter winding seat assy.

Note:
When removing 0-C106, first lift up its upper side then pull it upward.

3. Magnet S101

3-1 Remove the LW13 located on the Shutter conrod (0-C38) and unhook 0-C38 from the Release lever assy. (0-S123).

3-2 Curtain gear hook lever assy. CNS1.4x1.6 x2
3-3 CNL-B1.4x2.5, W29 (t=0.2) CNL-B1.4x2
3-4 S135 Magnet cover
3-4 S134 x2 Magnet retainer screw
3-5 S101 Magnet

4. 2nd curtain bounce prevention lever assy. 0-C145

2nd curtian bounce side
4-1 C147 / C179 / W6 Bounce adjusting screw / Bounce prevention adjusting collar
4-2 C149 2nd curtain bounce prevention lever spring

1st curtain bounce side
4-3 CNM2x5.5
4-4 W6 for adj.
4-5 C139 / C142 / 0-C141 / C142/ C143 / C140 / C142 come out together.
4-6 C138 1st curtain bounce prevention lever spring
4-7 C137 Spring tension adjusting nut --- not neccessory to concern its top and bottom.
4-8 0-C145 2nd curtain bounce prevention lever assy.
4-9 C142 Friction washer

5. Shutter charge 3rd gear assy. 0-C121

5-1 0-C121 Shutter charge 3rd gear assy.

6. Release conrod C66

6-1 LW10 x2
6-2 C66 Release conrod

7. Charge lever assy. (0-C44), 1st diaphragm coupler lever assy. (0-C55) and the related parts.

7-1 Unhook the Release lever spring (C65) and the Charge lever spring (C180).

7-2 C36 Mirror up spring
7-3 0-C25 Charge lever retainer screw assy.
Tools: 24400K-C25-A
7-4 0-C44 Charge lever assy.
7-5 C180 Charge lever spring
7-6 C51 Mirror coupler lever shaft
7-7 C59 / C177 Diaphragm spring / Spring silencer tube
7-8 LW13 x2
7-9 W75 x2 (t=0.2)
7-10 C60 Diaphragm conrod
7-11 0-C55 1st diaphragm coupler lever assy.

8. 3rd winding gear assy. 0-C23

8-1 0-C23 3rd winding gear assy.

9. Release conrod 0-C62

9-1 C64 / C65 Release lever retainer nut / Release lever spring
Tools: 23400K-B83-A
9-2 0-C62 Release lever assy.

10. 2nd winding gear C6

10-1 C7 / C6 / B0 1 x12 / C8 ----- left handed screw
2nd winding gear shaft / 2nd winding gear / 2nd winding gear shaft seat

11. 2nd swing lever assy. 0-C71

11-1 CNM1.4x2
11-2 0-C76 Guide roller assy.
11-3 W1 for adj.
11-4 L-CNL-D1.4x1.6 ----- left handed screw
11-5 C78 Guide collar
11-6 W28 for adj.
11-7 LW13
11-8 W6 for adj.

11-9	0-C71	2nd swing lever assy.
11-10	W8	
11-11	0-C67	1st swing lever assy.

12. Mirror 2nd conrod assy. (0-C49) and Shutter conrod assy. (0-C38)

12-1	LW13	
12-2	0-C49	Mirror 2nd conrod assy.
12-3	Unhook the Coupler spring (C37).	
12-4	0-C38	Shutter conrod assy.

13. Three-forked lever assy. 0-C33

13-1	C32 / C37	Three-forked lever shaft / Coupling spring
13-2	0-C33	Three-forked lever assy.
13-3	W31	(t=0.5)

14. Clutch adjusting plate C42

14-1	CNM1.4x1.6	
14-2	C42	Clutch adjusting plate

15. Curtain gear hook lever block

1st curtain hook lever (S120), Release lever assy (0-S123), 2nd curtain hook lever (S128), Armature lever assy. (0-S130) and Manual lever (S133).

15-1	S119	1st curtain hook lever shaft Tools: 24400K-S119-A
15-2	S125	Coupler spring
15-3	S120	1st curtain hook lever
15-4	S121	1st curtain hook lever restitution spring
15-5	S122	Release lever retainer collar
15-6	0-S123 / S139	Release lever assy. / 1st curtain hook collar
15-7	S126	2nd curtain release spring
15-8	S127	Release lever shaft
15-9	S129	2nd curtain hook lever restitution spring
15-10	S128	2nd curtain hook lever
15-11	0-S130 / LW10 / W75 / S102	Armature lever assy. / Armature
15-12	S136	Armature lever shaft
15-13	S133	Manual lever
15-14	0-S103	Magnet seat assy.

16. Armature S102

16-1	LW10	
16-2	W75	(t=0.2)
16-3	S102	Armature

ASSEMBLY PROCEDURES II

1. Assembly of the Curtain hook lever block.

Confirmation:
Dirts, scratches and fingerprints are not allowed on the surface of the Armature (S102). Carefully wipe off dirts and fingerprints with ether or alcohol moistened lens cleaning tissues.

1-1 Install the Armature (S102) to the Armature lever assy. (0-S130) with chamfered face up.

1-2 W75 (t=0.2)
1-3 LW10

2. Installation of the Curtain hook levers and the related parts.

° C1 assembly stand (24400J-C1-A)

* All springs can be easily hooked at the proper positions after completing the assembly of this block.

2-1 Install the Magnet seat assy. (0-S103) to the main plate of the Wind mech. block.
2-2 S133 Magnet lever
2-3 S136 Armature lever shaft ---- Its flat side faces down.
2-4 0-S130 Armature lever assy.
2-5 S128 2nd curtain hook lever
2-6 S129 2nd curtain hook lever restitution spring --- Its hook end faces down.

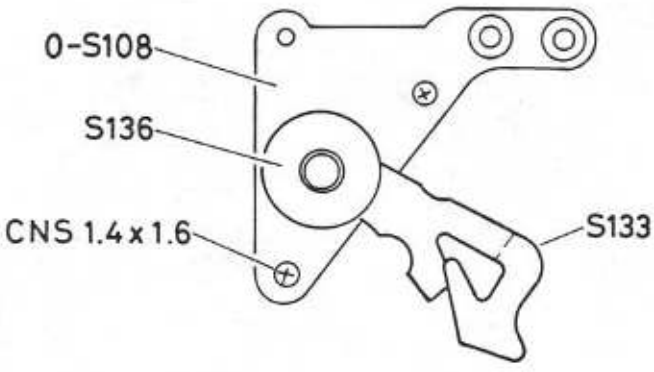


Fig. 3

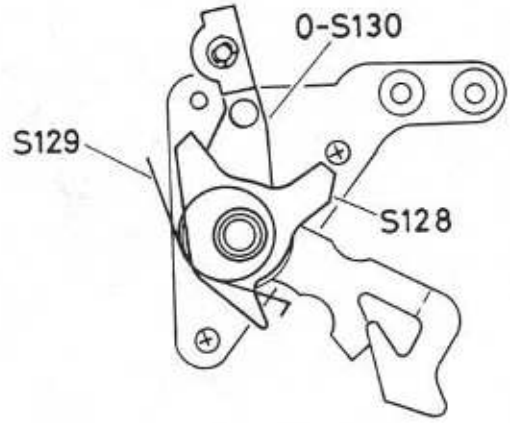


Fig. 4

2-7 S127 Release lever shaft ---Lower projected side faces down.
2-8 S126 2nd curtain release spring ---- Its hook end faces up.
2-9 0-S123 / S139 Release lever assy. / 1 st curtain hook collar
* Refer to Fig. 5 for installation.
2-10 S122 Release lever retainer collar --- not neccessory to concern top and bottom.

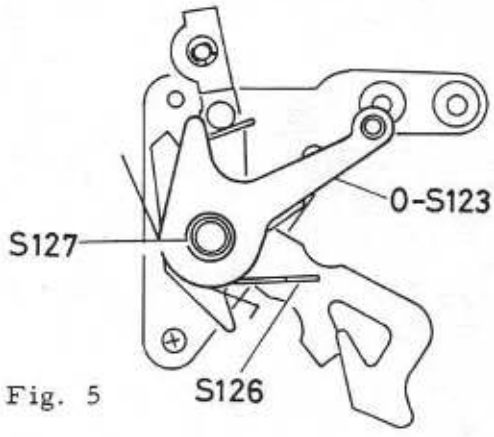


Fig. 5

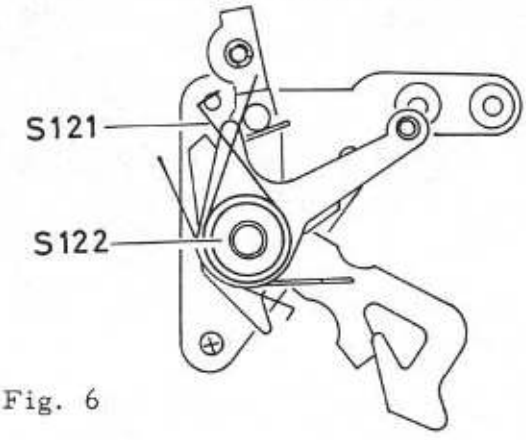


Fig. 6

2-11 S121 1st curtain hook lever restitution spring --- Its hook end faces up.
2-12 S120 1st curtain hook lever --- Refer to Fig. 7 for installation.
2-13 S125 Coupler spring ---- Its hook end faces down.
2-14 S119 1st curtain hook lever shaft ---- Threaded to the top end faces up.

Note:
Be careful not to pinch the springs when tightning the 1st curtain hook lever shaft (S119). Tools: 24400K-S119-A

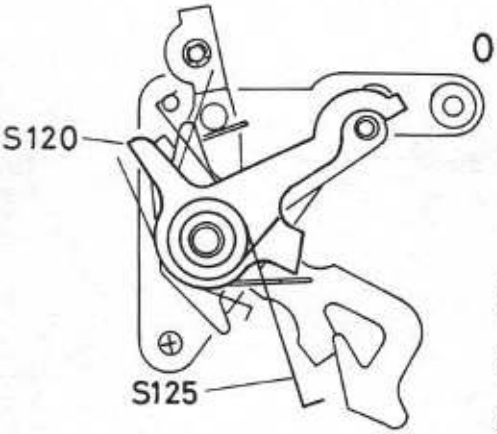


Fig. 7

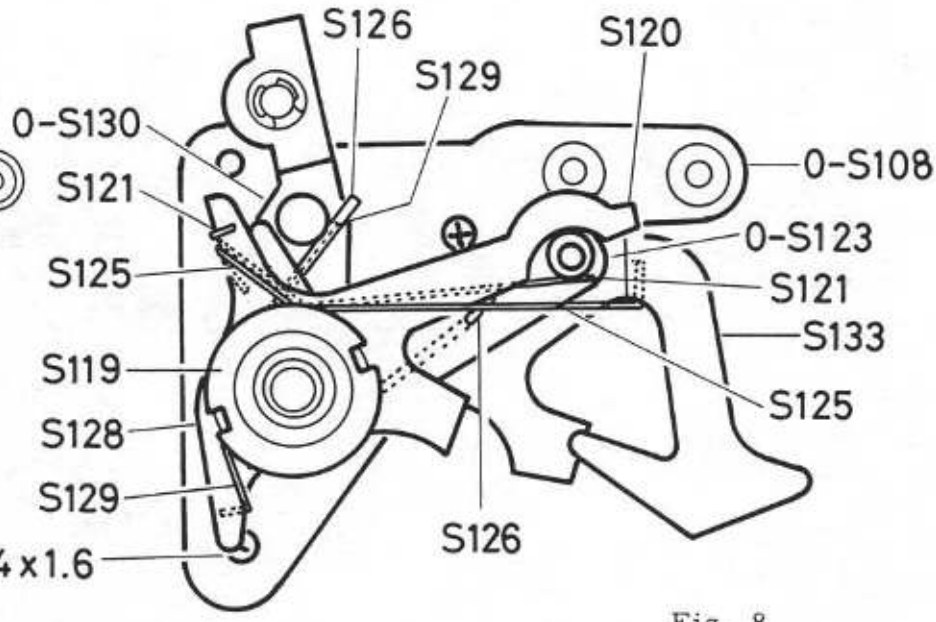


Fig. 8

Confirmation:
Make sure each lever moves smoothly after tightning S119.

2-15 Hook the springs at the proper positions. Refer to Fig. 8.

3. Confirmation: Check the function of the Curtain hook lever block. as follows:

3-1 Set the Armature in the up-right position.

3-2 When moving the 1st curtain hook lever (S120) upward, the Manual lever (S133) must follow S120 slightly.

3-3 Move the levers (S120 and S133) upward with a tweezers while holding the Armature with a finger. The levers must return its original position by own spring tension.

4. Magnet S101

4-1 S101 Magnet
4-2 S134 x2 Magnet retainer screw --- tighten it temporarily.

Confirmation:
Push the Armature toward the Magnet and then supply the 2 V to the Magnet Make sure that the holding strength of the Magnet exceeds 270g by using a dial tension gauge.

4-3 Remove the Curtain hook lever block from the main plate. CNS1.4x1.6 x2

5. Adjustment: The contact of the Magnet with the Armature.

Confirmation
Make sure the Magnet has not been in contact with the Armature as shown in Fig. 10.

Adjustment:
The adjustment can be made by adding a W3 between the Magnet and either side of the Magnet installing post. Refer to Fig. 10.

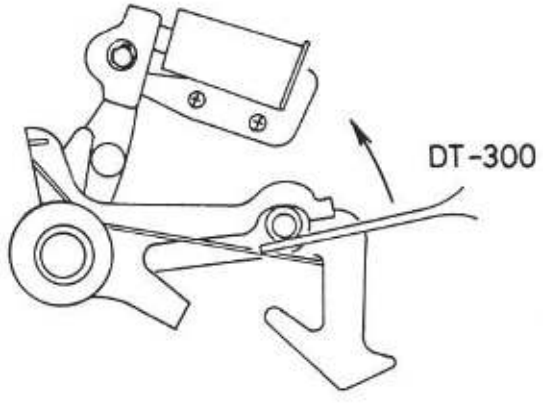


Fig. 9

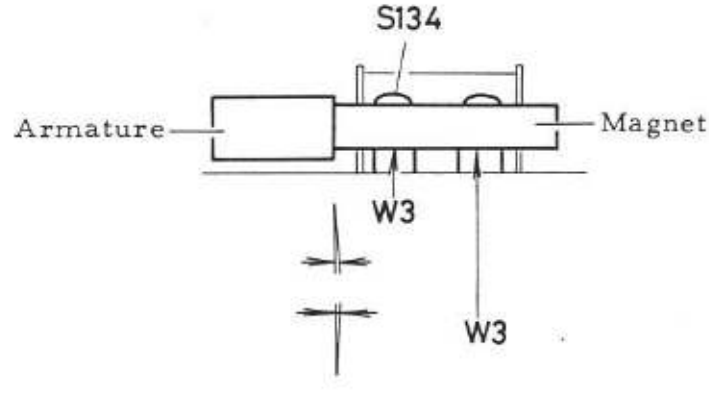


Fig. 10

6. Clutch adjusting plate C42

6-1 C42 Clutch adjusting plate
6-2 CNM1.4x1.6 ----- tighten it in the center of the slot of C42 temporarily.

7. Three-forked lever assy. 0-C33

7-1 W31 t=0.5
7-2 0-C33 Three-forked lever assy.
7-3 C32 Three-forked lever shaft
7-4 0-C38 Shutter conrod assy.
7-5 C37 Coupling spring

8. 2nd Swing lever assy. 0-C71 and 1st Swing lever assy. 0-C67

8-1 W8 for adj.
8-2 0-C67 1st swing lever assy.
8-3 0-C71 2nd swing lever assy.
8-4 W28 for adj.
8-5 C78 Guide collar
8-6 L-CNL-D1.4x1.6 -------- left-handed screw
8-7 W6 for adj.
8-8 LW13

Confirmation:
Minimize the vertical direction play of 2nd swing lever by using the W28 as small as possible.
After the adjustment, the 2nd swing lever goes down its own weight smoothly.

9. Guide roller assy. 0-C76

9-1 W1 for adj.
9-2 0-C76 Guide roller assy.
9-3 CNM1.4x2

Adjustment and Confirmation:
1. The side of the 2nd swing lever assy. (0-C71) should not touch with the Guide roller assy. (0-C76).

2. The 2nd swing lever (0-C71) must go down its own weight.

10. 2nd Winding gear C6

10-1 C8 / BO 1 x12 / C6 2nd winding gear seat / Steel ball 1mm x12 / 2nd winding gear

10-2 C7 2nd winding gear shaft ----- left-handed screw

Confirmation:
The 2nd winding gear (C6) must rotate smoothly.

11. 1st diaphragm coupler lever assy. (0-C55), Mirror 2nd conrod assy. (0-C49) and Charge lever assy. (0-C44).

11-1	0-C55	1st diaphragm coupler lever assy.
11-2	C51	Mirror coupler lever shaft ----- Its flat side faces down.
11-3	0-C49	Morror 2nd conrod assy.
11-4	C180	Charge lever spring ----- Its hook end faces up.
11-5	0-C44	Charge lever assy.
11-6	0-C25	Charge lever retainer screw assy.

Tools: 24400K-C25-A

Confirmation:
After installing the Charge lever retainer screw (0-C25), each lever functions smoothly.

Note:
Hook the springs after completing this installation.

12. Diaphragm conrod C60

12-1	C60	Diaphragm conrod
12-2	W75 x2	t=0.2
12-3	LW13 x2	

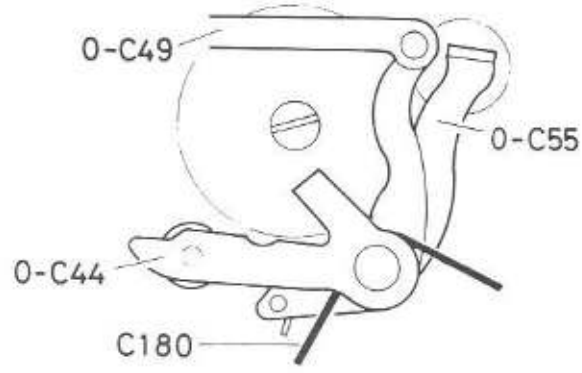


Fig. 12

13. Release lever assy. 0-C62

13-1	W27	for adj.
13-2	0-C62	Release lever spring
13-3	C64 / C65	Release lever restriction nut / Release lever spring

Tools: 23400K-B83-A

* Hook the Release lever spring (C65) after installing the Release conrod (C66).

14. Relase conrod C66

14-1 Position the Relase crank pin (C96) as shown in Fig. 13, then fit the holes of the Release conrod (C66) into the Release crank pin (C96) and the pin of the Release lever assy. (0-C62).

14-2 LW10 x2

14-3 Hook the Release lever spring (C65) and the Charge lever spring (C180) as shown in Fig. 13.

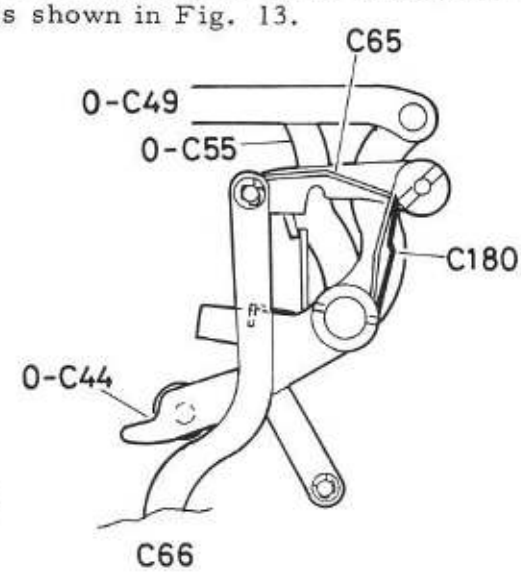
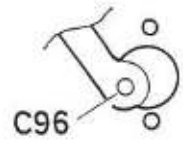


Fig. 13



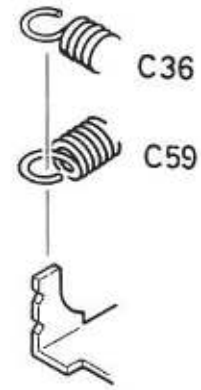


Fig. 14

15. Diaphragm spring (C59) and Mirror up spring (C36).

15-1 Push the Spring silencer tube (C177) to in the middle of the Diaphragm spring (C59).

15-2 C59 Diaphragm spring ---- longer one

15-3 C36 Mirror up spring ----- shorter one

* Take care of the hooking directions for both springs. Refer to Fig. 14.

15-4 Hook the Mirror 2nd conrod assy. (0-C49) to the Three-forked lever assy. (0-C33).

15-5 LW13

16. 3rd winding gear assy. 0-C23

16-1 Confirmation:
Before installing the 3rd winding gear (0-C23), check the function of its ratchet as follows:

1. Put 0-C23 upside-down.
2. Turn the gear in the arrow direction as shown in Fig. 15 to set the ratchet indicated by B between teeth.

3. The B part of the ratchet goes into the teeth when the A part is pulled in the arrow direction as indicated by the dot line as shown in Fig. 15.
4. Make sure this ratchet movement at the several places.

16-2 Push the Chargelever assy. (0-C44) upward to latch it to the Release lever assy. (0-C62).
Install the 3rd winding gear assy. (0-C23).

16-3 When unhooking 0-C62 and 0-C44, be sure to support the Swing lever and the Mirror 2nd conrod assy. (0-C49), refer to Fig. 16, then push up the Release conrod (C66).

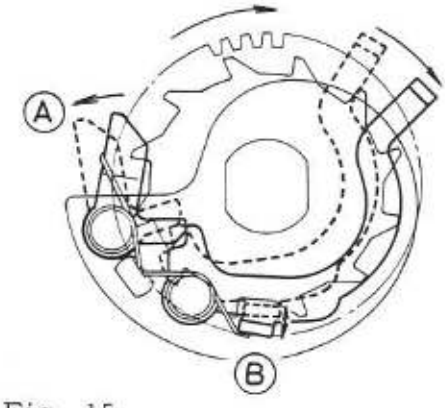


Fig. 15

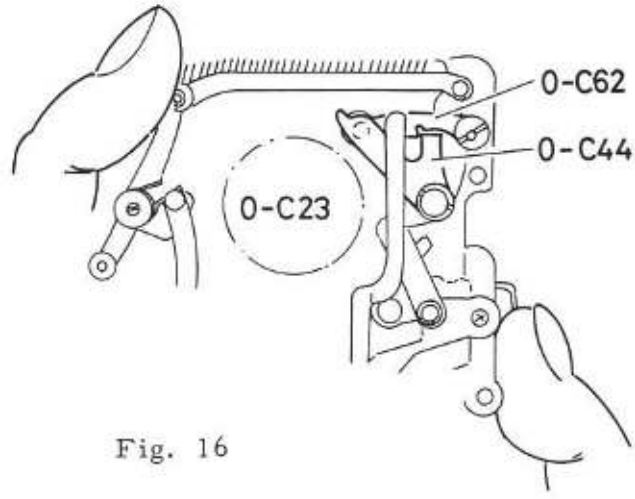


Fig. 16

Confirmation :
1. Turn the 3rd winding gear to latch the Release lever assy. (0-C62) and the Charge lever assy. (0-C44).
2. The Release lever assy. (0-C62) must hook the Charge lever assy. (0-C44) more than one half of its plate thickness.

17. Shutter charge 3rd gear assy. (0-C121) and Curtain bounce prevention mech.

17-1 Screw the Spring tension adjusting nut (C137) all the way until it stops and then unscrew it about one turn.

* 2nd curtain prevention mech. side.

17-2 C142 Friction washer

Note :
1. Be careful not to put the wrong side up. Its shining side must face to the 2nd curtain prevention lever assy. (0-C145).
2. In case using the New C142, its whitish side must face up.

17-3 0-C145 2nd curtain prevention lever assy.

* Apply a Oil barrier on the part of 0-C145 to prevent its brake part from grease permeation. Oil barrier:

17-4 Install the Shutter charge gear assy. (0-C121) to the Wind mech. block as follows:

1. Hold the 2nd curtain gear (bottom gear) with your fingers and then turn the Shutter charge gear (top gear) clockwise until it stops.
2. Install the Shutter charge 3rd gear assy. (0-C121) to the Wind mech. block so that its hook part as indicated by the arrow in Fig. 18 positions about 8 o'clock.

17-5 C138 1st curtain bounce prevention lever spring

Fig. 17

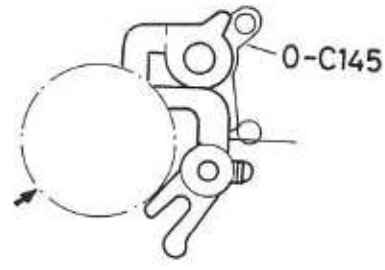


Fig. 18

17-6 C142 / 0-C141 / C143 Friction washer / 1st curtain bounce prevention lever assy. / Bounce prevention lever retainer plate

17-7 CNM2x5.5 ----- 1st curtain bounce prevention lever side.

17-8 C179-00A ---- l= 3mm Bounce prevention adjusting collar A

-00B	2.7mm	"	B
-00C	2	"	C
-00D	2.5	"	D

* The adjustment is not neccessory at this time.

17-9 W6 for adj.

17-10 C149 2nd curtain bounce prevention lever spring

17-11 C147 Bounce adjusting screw

17-12 Turn both the curtain gears together to engage it with the bounce prevention levers as shown in Fig. 19.

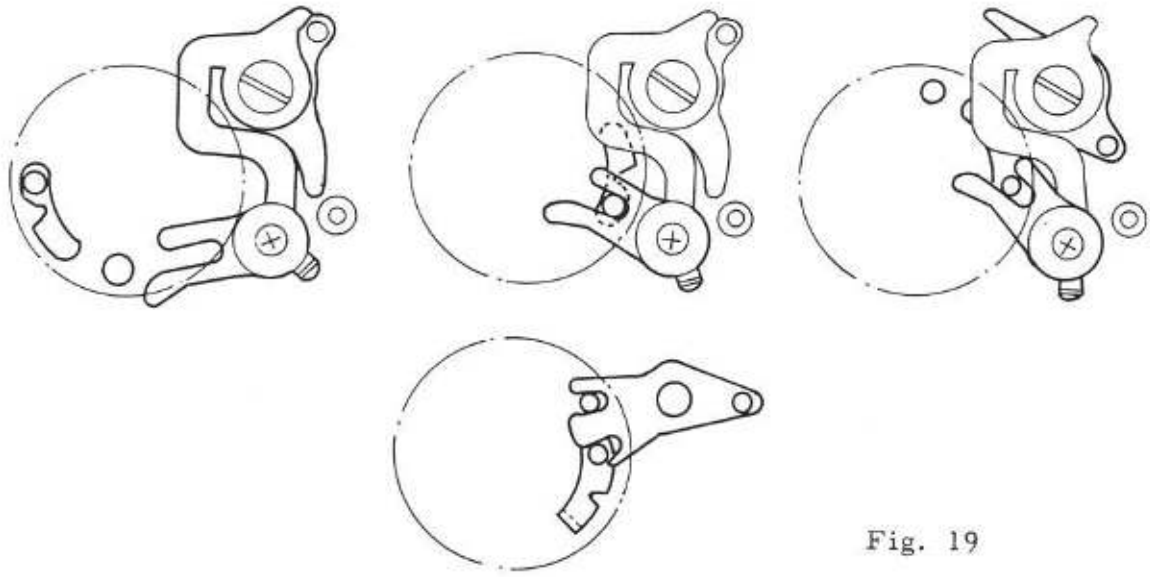


Fig. 19

17-13 Curtain hook lever block
17-14 CNS1.4x1.6 x2

18. Adjustment: Magnet installing position adjustment

18-1 Confirmation:
Make sure that both the curtain gears have been hooked by the curtain hook levers. Refer to Fig. 20.

18-2 Adjust the magnet installing position as follows:

1. Loosen the Magnet retainer scrrew (S134 x2).
2. Push the 2nd curtain hook lever (S128) in the arrow direction to obtain the firm engagement of S128 with 2nd curtain gear as shown in Fig. 20.
   Push the Armature to the Magnet lightly while remaining the above condition, tighten the Magnet retainer screw (S134 x2) alternately little by little.

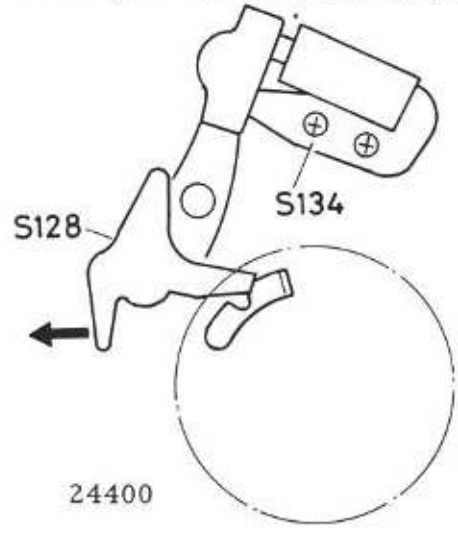


Fig. 20

19. Confirmation: The holding strength of the Magnet (S101).

19-1 Supply the 2 V to the Magnet (S101).

Note:
Push the Armature toward the Magnet before supplying the power.

19-2 Set a Dial tension gauge as shown in Fig. 21 and make sure the holding strength of the Magnet (S101).
The holding strength must exceed 270g.

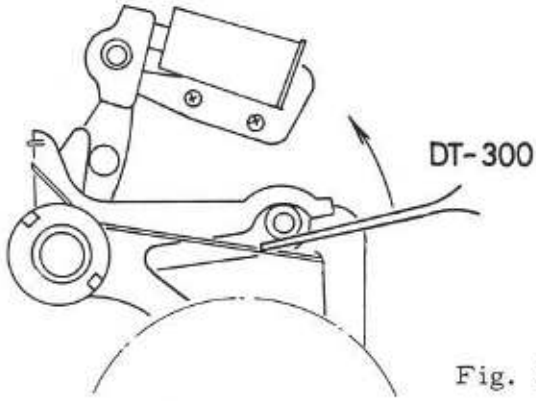


Fig. 21

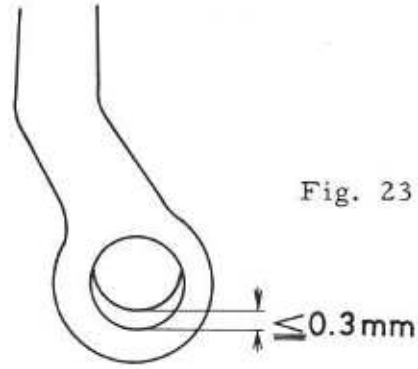


Fig. 23

20. Confirmation: Over-charge of Shutter conrod.

* Set the Wind mech. block in the charged condition.

20-1 Position the Shutter conrod assy. (0-C38--A) on the Release lever assy. (0-S123).

20-2 Confirmation:
When using 0-C38-00A, there should be the clearance of 0.3mm to 1/2 of its hole as shown in Fig. 23.

20-3 Adjustment:
If the clearance of above is too narrow, the adjustment will be made by replacing 0-C38-00A with 0-C38-00B.
But its maximum clearance should be 0.3mm to 1/3 of its hole.
Be sure to combine the 1st curtain hook collar (S139) with 0-C38-00B.

20-4 Fit the Shutter conrod assy. (0-C38-00A or 00B) into the Release lever assy. (0-S123).

20-5 LW13

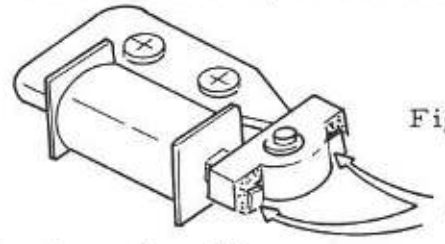


Fig. 24

21. Application of sealant

* Set the Wind mech. block in the charged position.

21-1 Supply the 3V to the Magnet.

21-2 Release the Wind mech. block with supporting the Swing lever and the Mirror 2nd conrod assy.

* At this time, the Magnet must hold the Armature.

21-3 Apply the same amout of Silicone (Shin-etsu kagaku) KE47W which has been used for Auto 110 Super in the same purpose.

Note :
Do not apply it other than spesified places.

21-4 Remain above condition until the silicon rubber drys up that takes approx. 12 to 24 hours.

22. MG cover S135

22-1 Remove LW13 and the Shutter conrod from the Release lever (0-S123).

22-2 Pass through the two leads wires coming from the Magnet into the ditch of the MG cover (S135).

22-3 S135 MG cover

22-4 W29 (t=0.2), CNL-B1.4x2.5 ----- bottom side
22-5 CNL-B1.4x2.0

22-6 Fit the Shutter conrod into the Release lever assy. (0-S123).

22-7 LW13

23. Diaphragm control block S200

* Set the Wind mech. block in the charged position.

23-1 S200 Diaphragm control block
23-2 CSS1.4x2
23-3 CNL-D1.4x2.5
23-4 C93 Swing lever spring hook lever
23-5 C94 Swing lever spring

24. Shutter winding seat assy. 0-C106

* With the Wind mech. block in the released condition.

24-1 Turn both the curtain gears together counterclockwise to set in the released position, and then turn the shutter charge gear (top gear) until its pin touches the pin of the 1st curtain gear.

24-2 To install the Shutter winding seat assy. (0-C106) with remaining above, turn the top gear of the Shutter winding gear (0-C106) to position its first hole aligns with the Timing SW actuating lever as shown in Fig. 26.

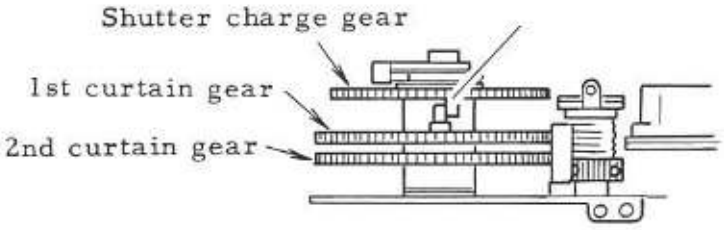


Fig. 25

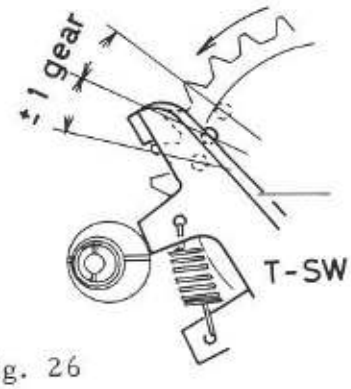


Fig. 26

25. Hold lever C116

25-1 C116 Hold lever
25-2 C118 Hold lever restitution spring --- Its hook end faces down.
25-3 C117 Hold lever shaft

26. Buffer lever C181

26-1 C186 Friction spring
26-2 C181 Buffer lever
* Its wider bent end faces down.

26-3 C183 Buffer spring ----- Its hook end faces down.
26-4 C182 Buffer lever retainer screw

27. Timing SW lever restitution spring hook screw (C169) and Timing SW lever restitution spring (C171)

27-1 C169 / C171 Timing SW lever restitution spring hook screw / Timing SW lever restitution spring

28. Adjustment: Over-charge and Charge sequence of Wind mech. block.

° Winding mech. Block Function Instrument for 244 (WBFI-244)

28-1 The Wind mech. block should be in the released position.

28-2 As to turn the curtain gears (1st and 2nd) counteclockwise , eliminate the backlash of those gears.
Loosen the three screws (CNL - D1.4x1.4) as shown in Fig. 28, then turn the Shutter charge gear counterclockwise to obtain the 0.3mm clearance as shown in Fig. 27.
Tighten the three screws while remaining the clearance as mentioned above.

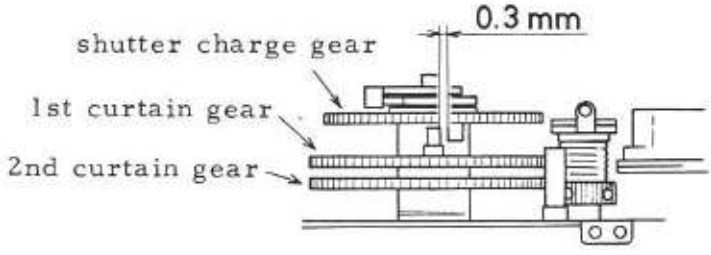


Fig. 27

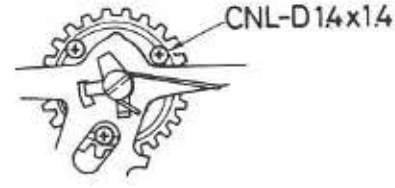


Fig. 28

28-3 Attach the Wind mech. block to the WBFI-244.

28-4 Slowly turn the knob of the WBFI-244 counterclockwise. Make sure the Wind mech. block functions following order.

1. The Charge lever assy. (0-C44) hooks the Release lever assy. (0-C62). Refer to Fig. 29-1.

2. The 1st curtain hook lever (S120) hooks the 1st curtain gear. Refer to Fig. 29-2.

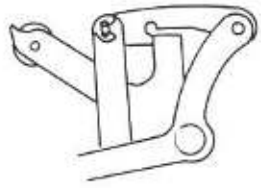


Fig. 29-1

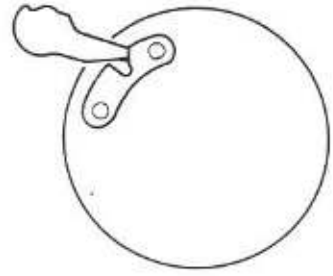


Fig. 29-2

3. The 2nd curtain hook lever (S128) hooks the 2nd curtain gear. Refer to Fig. 29-3.

4. The 3rd winding gear assy. (0-C23) must be over-charged about half to one teeth between from hooking the 2nd curtain gear and disengaging the clutch of the 3rd winding gear (0-C23).

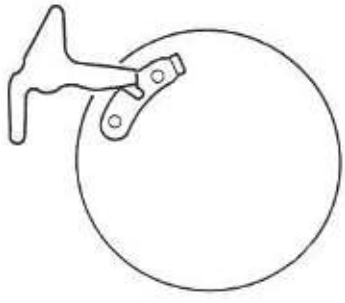


Fig. 29-3

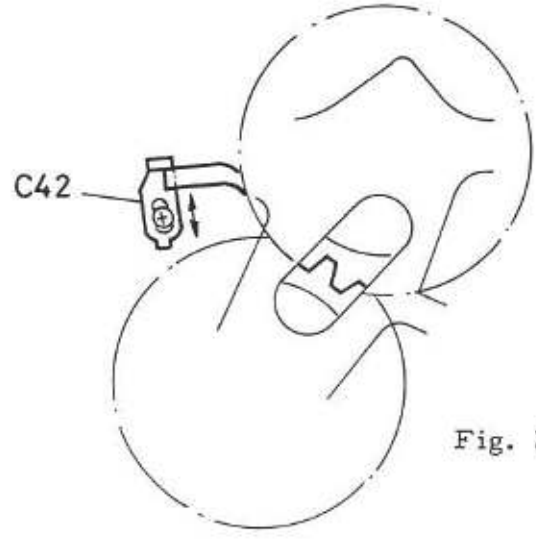


Fig. 29-3

Adjustment :
Over-charge of the 3rd winding gear assy.

28-5 To adjust the position for the clutch disengagement, slide the clutch adjusting plate (C42) back and forth.

29. Confirmation and Adjustmnet: The position of Swing lever.

29-1 Attach the Wind mech. block to the WBFI-244.

29-2 Confirmation: The depth of the Swing lever.

Check the position of the Swing lever by using the stop side and the through side of the gauge.

29-3 Adjustment :

The adjustment can be made by adding the Diaphragm actuating plate adjusting washer (C152) or removing it . Refer to Fig. 30.

Adhesive: Threebond 1405D

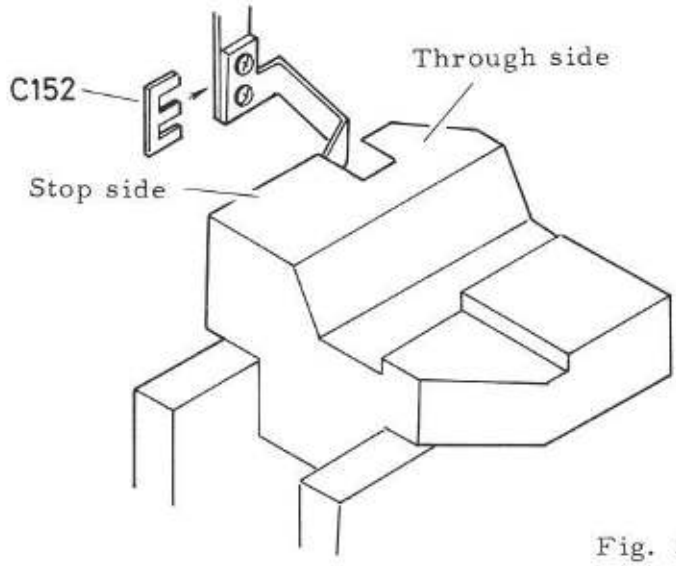


Fig. 30

29-4 Confirmation: The width of the Swing lever.

Check the position of the Swing lever by using the stop side and the through side of the gauge. Refer to Fig. 31.

29-5 Adjustment:
Loosen the screws (CNL-B1.4x2.2) and slide the 1st swing lever assy. (0-C67) to the proper position.

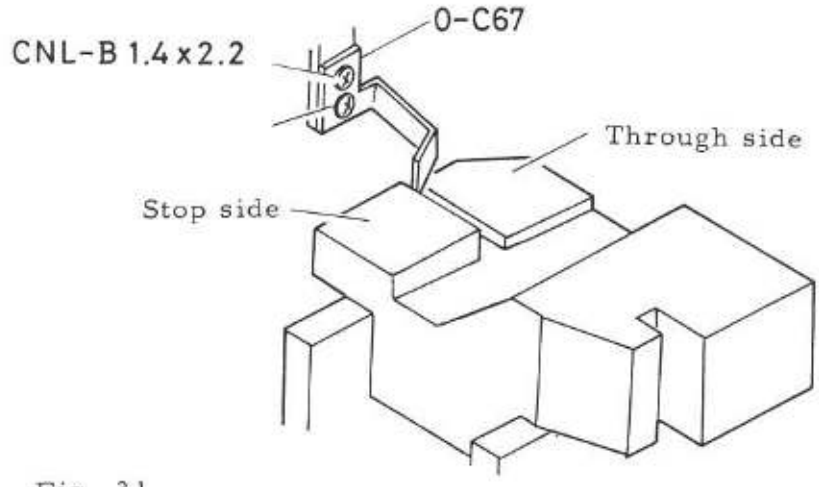


Fig. 31

DISASSEMBLY III

Film Transport, Multi-exposure and Mirror brake mechanism

1. Film winding seat assy. 0-B201

1-1 Unsolder the brown lead wire (No. 20) from Multi-exposure SW.

1-2	CNM1.7x2	
1-3	B237	Film winding seat retainer screw
1-4	B10	Film winding seat retainer screw

2. Multi-exposure lever assy. 0-B217

2-1	B223	Multi-exposure indication plate
2-2	B222	Multi-exposure ring retainer screw
2-3	B221	Multi-exposure ring
2-4	0-B217	Multi-exposure lever assy.
2-5	B219	Multi-exposure lever spring

3. Multi-exposure hook lever B226

3-1	CNL-F1.7x3	
3-2	B242	Multi-exposure change lever
3-3	B243	Multi-exposure change lever collar
3-4	B244	Multi-exposure change lever spring
3-5	B226	Multi-exposure hook lever
3-6	B228	Multi-exposure hook lever spring

4. Wind completion lever assy. 0-B209

4-1	B232	Wind completion lever spring
4-2	CNL-F1.7x2.5	
4-3	B213	Latch lever
4-4	B215	Coupling spring
4-5	B212	Latch lever collar
4-6	B211	Plate spring
4-7	B210	Plate spring collar
4-8	0-B209	Wind completion lever assy.
4-9	B231	Multi-exposure releasing lever spring
4-10	CSS1.4x3.5	
4-11	B216	Adjusting cam

5. Friction gear B203

5-1	B245	Film winding gear retainer screw---left-handed
5-2	B202	Film winding gear
5-3	W100	(t=0.3)
5-4	B204	Friction ratchet wheel
5-5	B208	Friction spring
5-6	B203	Friction gear
5-7	W91	for Adj.

6. Release lever assy. 0-B239

6-1	B241	Retaining washer
6-2	0-B239	Release lever assy.
6-3	0-B201	Film winding seat assy.
6-4	B204	Friction ratchet wheel

7. Mirror brake block

7-1	CSS1.7x2	
7-2	CNS1.7x2	
7-3	D112	Retainer plate

* To remove Retainer plate (D112) from Mirror brake block, raise its flywheel side.

7-4	0-D108 / D111	Brake lever spring assy. / Brake lever spring
7-5	0-D107	Flywheel A assy.
7-6	0-D103	1st gear assy.
7-7	0-D101	Mirror brake seat assy.

ASSEMBLY PROCEDURES III

Film transport, Multi-exposure and Mirror brake mechanism

1. Mirror brake seat assy. 0-D101

1-1	0-D103	1st gear assy.
1-2	0-D107	Flywheel A assy.

* Do not allow grease and oil on the side of Flywheel.

1-3	D111 / 0-D108	Brake lever spring / Brake lever assy.
1-4	D112	Retainer plate

* With moving away Brake lever from Flywheel, each rotating part must function smoothly.

1-5 Hook Brake lever spring (D111) to Brake lever assy. (0-D108).

1-6 CSS1.7x2 ------ tighten temporarily.
1-7 CNS1.7x2 ------ tighten temporarily.

Film transport mechanism

2. Release lever assy. 0-B239

2-1	0-B239	Release lever assy.
2-2	B241	Retaining washer

3. Friction gear B203

3-1	W91	for Adj.
3-2	B203	Friction gear
3-3	B208	Friction spring
3-4	B204	Friction ratchet wheel
3-5	W100	(t=0.3)
3-6	B202	Film winding gear
3-7	B245	Film winding gear retainer screw -- left-handed screw

4. Wind completion lever assy. 0-B209

4-1	0-B209	Wind completion lever assy.
4-2	B210	Plate spring collar
4-3	B211	Plate spring
4-4	B212	Latchet lever collar
4-5	B215	Coupling spring
4-6	B213	Latch lever
4-7	CNL-F1.7x2.5	Adhesive: Arontite
4-8	B216, CSS1.4x3.5	Adjusting cam
4-9	B232	Wind completion lever spring

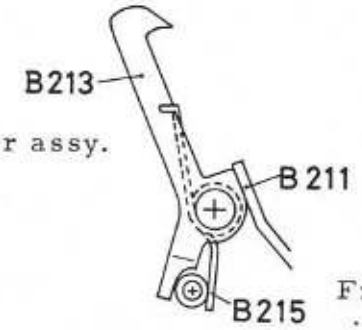


Fig. 1

5. Multi-exposure hook lever B226

5-1	B228	Multi-exposure hook lever spring
5-2	B226	Multi-exposure hook lever
5-3	B244	Multi-exposure change lever spring
5-4	B243	Multi-exposure change lever collar
5-5	B242	Multi-exposure change lever

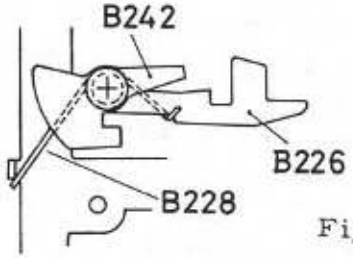


Fig. 2

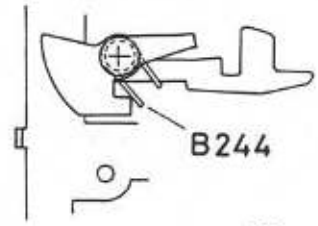


Fig. 3

5-6 CNL-F1.7x3
5-7 B231 Multi-exposure releasing lever spring

6. Multi-exposure lever assy. 0-B217

6-1 B219 Multi-exposure lever spring ----- Its hook end faces down.
6-2 0-B217 Multi-exposure lever assy.
6-3 B221 Multi-exposure ring
6-4 B222 Multi-exposure ring retainer screw
6-5 B223 Multi-exposure indication plate

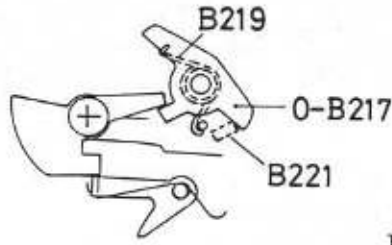


Fig. 4

Confirmation:

1. Turn the Multi-exposure ring (B221) clockwise to set it to the ME position.
2. Once move the Wind completion lever assy. (0-B209) to the right as seen from you. And move fingers away from the Wind completion lever assy.
   The Multi-exposure ring (B221) must re-set to its original position when the Wind completion lever assy. returns to its original position by the spring tension of the Wind completion lever spring.

7. Installation of Film winding seat assy. 0-B201

7-1 B10 Film winding seat retainer screw
Adhesive: Arontite

7-2 B237 Film winding seat retainer screw
Adhesive: Arontite

7-3 CNM1.7x2 Adhesive: Arontite

7-4 Solder the brown lead wire (No. 20) on the switch part of the Film winding seat assy. (0-B201).

Disassembly of Film advance control seat assy. (0-B101).

1. Film advance restriction cam gear assy. 0-B137

1-1	L-CNL-G1.7x3 -----	left-handed screw
1-2	W66	for adj.
1-3	0-B137	Film advance restriction cam gear

2. Connecting lever assy. 0-B150

2-1	B123	120 lever spring
2-2	B155	Sector gear spring
2-3	CNL-F1.7x2.5	
2-4	0-B150	Connecting lever assy.
2-5	B156	Sector gear collar
2-6	W66	for adj.
2-7	B154	Positioning sector gear
2-8	B176 / B158	Hold lever collar / Hold lever spring
2-9	B157	Film winding hold lever
2-10	W66	(t=0.1)
2-11	CNL-F1.7x2.5	
2-12	0-B150	Connecting lever assy.
2-13	B127	Count starting lever spring
2-14	B128	Count starting lever collar
2-15	B124	Count starting lever
2-16	B133	Transporting claw spring

3. Hook claw B B116

3-1	CSM1.7x3	
3-2	B122	120 lever collar
3-3	B121	120 lever
3-4	W36	t=0.5
3-5	0-B118	220 lever assy.
3-6	B120	220 lever spring
3-7	B117	220 lever collar
3-8	B116	Hook claw B
3-9	W66	t=0.1

4. Counter cam assy. 0-B104

4-1	B108	Counter cam shaft nut	Tools: 231K-E111-A
4-2	W75	for adj.	
4-3	0-B104	Counter cam assy.	
4-4	B109	Counter cam restitution spring	

5. Transporting claw B132

5-1	CNL-D1.4x2.5		
5-2	0-B134	Transporting cam assy.	
5-3	B132	Transporting claw	
5-4	W101	(t=0.1)	

6. Release lever A B114

6-1	CNL-F1.7x2.5		
6-2	B114	Release lever A	
6-3	B115	Release lever A spring	
6-4	B111	Rlease lever A collar	
6-5	B113	Hook claw spring	
6-6	B110	Hook claw A	
6-7	W66	(t=0.1)	
6-8	B6	Film holder detecting pin	

7. Release lever B assy. 0-B163

7-1	B166	Release lever B spring	
7-2	B12	Grip pin C	
7-3	0-B163	Release lever B assy.	Tools: 24400K-B7, B8-A2
7-4	B165	Release lever B collar	
7-5	B178	Cam charge sector gear	
7-6	B179	Washer	
7-7	B16	Film holder detecting pin B	

Assembly of Film advance control seat assy. 0-B101

1. Release lever B assy. 0-B163

1-1	B16	Film holder detecting pin B	
1-2	B179	Washer	
1-3	B178	Cam charge sector gear	
1-4	B165	Release lever B collar ---- Its higher sholder side faces down.	
1-5	0-B163	Rlease lever B assy.	
1-6	B12	Grip pin C	Adhesive: Apply Arontite on the thread end. Tools: 24400K-B7, B8-A-2
1-7	B166	Release lever B spring	

2. Release lever A B114

2-1	B6	Film holder detecting pin

2-2	W66	(t=0.1)
2-3	B110	Hook claw A
2-4	B113	Hook claw spring
2-5	B111	Release lever A collar
2-6	B115	Release lever A spring
2-7	B114	Rlease lever A
2-8	CNL-F1.7x2.5	

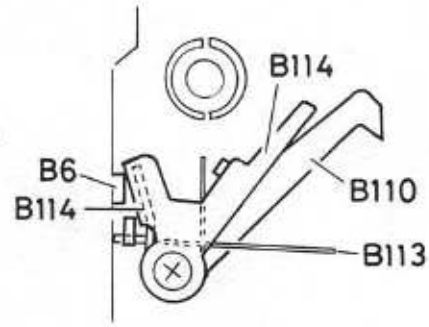


Fig. 1

3. Transporting claw B132

3-1	W101	(t=0.1)
3-2	B132	Transporting claw
3-3	0-B134	Transporting cam assy.
3-4	CNL-D1.4x2.5	

4. Counter cam assy. 0-B104

4-1	B109	Counter cam restitution spring --- Hook its hook end to the main plate.
4-2	0-B104	Counter cam assy.
4-3	W75	for adj.
4-4	B108	Counter cam shaft nut

* The vertical play of the Counter cam should be less than 0.1mm.

Adjustment:
Move away the Transport calw (B132) from the Counter cam assy. (0-B104) to be free.
Turn the Counter cam assy. (0-B104) counterclockwise about one and half times, then stop it by the Transport claw (B132).

5. Hook claw B B116

5-1	W66	(t=0.1)
5-2	B116	Hook claw B
5-3	B117	220 lever collar ----- Its flat side faces down.
5-4	B120	220 lever spring ----- Its longer end faces down.
5-5	0-B118	220 lever collar
5-6	W36	(t=0.5)
5-7	B121	120 lever
5-8	B122	120 lever collar
5-9	CSM1.7x3	

5-10 Hook the Hook claw spring (B113) to the Hook claw B (B116).

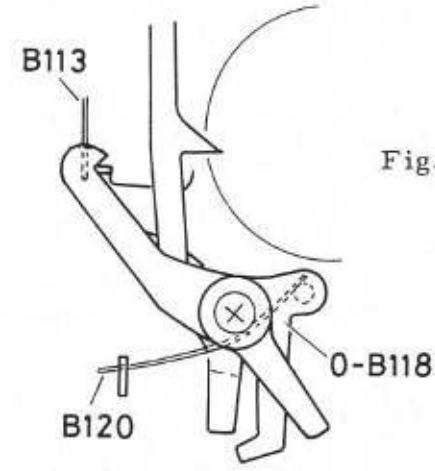


Fig. 2

6. Connecting lever assy. 0-B150

6-1 B133 Transporting claw spring ---- Hook the spring.
6-2 B124 Count starting lever
6-3 B128 Count starting lever collar
6-4 B127 Count starting lever spring

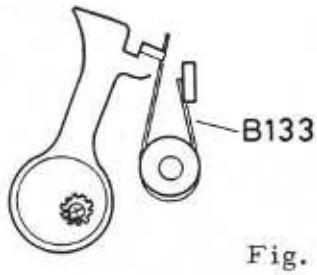


Fig. 3

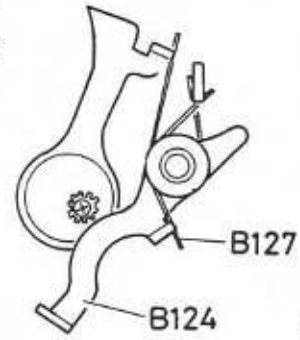


Fig. 4

6-5 0-B150 Connecting lever assy.
6-6 CNL-F1.7x2.5
6-7 W66 (t=0.1)
6-8 B157 Film winding hold lever
6-9 B176 / B158 Hold lever / Hold lever spring
* Hook the Hold lever spring (B158) to the 220 lever assy. (0-B118).

6-10 B154 Positioning sector gear
* Engage B154 with the Cam charge sector gear (B178) as shown in Fig. 6.

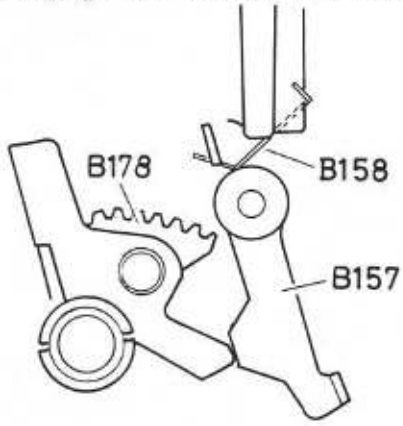


Fig. 5

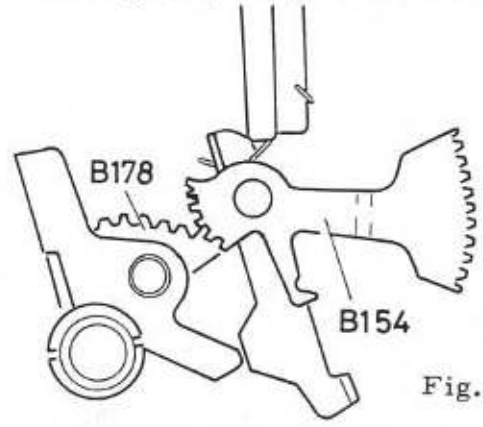


Fig. 6

6-11 W66 for adj.
6-12 B156 Sector gear collar
6-13 0-B150 Connecting lever assy.
6-14 CNL-F1.7x2.5
6-15 B155 Sector gear spring
6-16 B123 120 lever spring

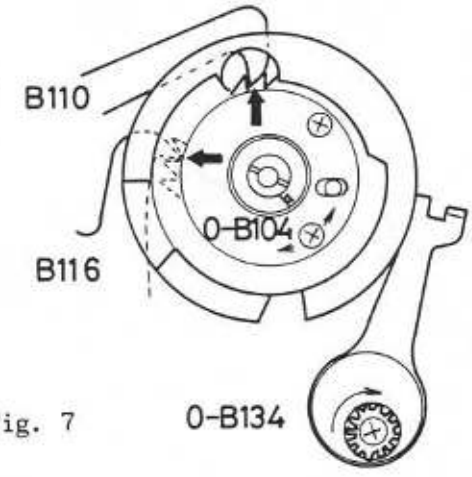
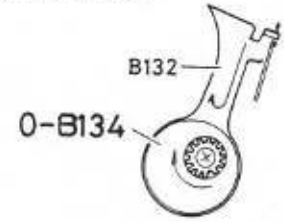


Fig. 7

7. Adjustment: The installation position of the Counter cam assy. (0-B104).

Attach the Film back to the Body. The Hook claw A (B110) and the Hook claw B (B116) must hook the left side of tooth of the Film counter assy. (0-B104) without the space as shown in Fig. 7.
The slight narrow space either the B110 or B116 is allowed. But if either hook claw is engaged with the tooth of 0-B104 with too much space, adjust it by moving the Counter cam assy. (0-B134). Loosen the three screws on 0-B104 to move.
Confirm the engagement of the Hook claw B in this way as explained below because its engagement cannot seen.
Gradually turn the Transporting cam assy. (0-B104) and make sure when the Hook claw A (B110) hooks the tooth of 0-B104, at the same time, the Hook claw B (B116) must move to the inside of 0-B104.

Confirmation:
Make sure the engagement of B110 and B116 by attaching and detaching the Film back from the Body several times.



8. Positioning of the Transporting claw (B132).

8-1 Attach the Film back to the Body.

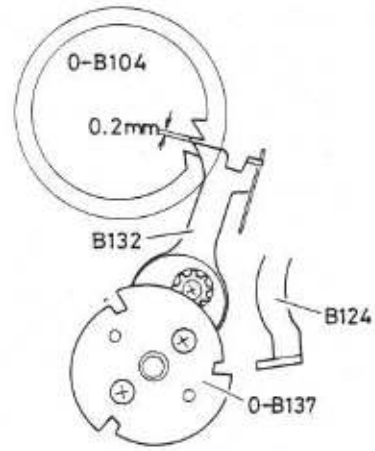
8-2 By turning the Transporting cam assy. (0-B134) in the clockwise direction, set the tip of the Transporting cam (B132) to the position where the Transporting cam is lowered and start going up slightly. Refer to Fig. 8.

9. Film advance restriction cam gear 0-B137

9-1 0-B137 Film advance restriction cam gear assy.
* Install the Film advance restriction cam gear assy. (0-B137) as shown in Fig. 9. At this time, The Tranporting claw (B132) should not move.

Confirmation
The clearance of 0.2mm (0.2 - 0.4mm) as shown in Fig. 9 should be remained.

9-2 W66 for adj.
9-3 L-CNL-G1.7x3 ----- left hande screw
Adhesive: Apply Arontite to the shaft.



How to make the mechanical shutter spped.

* Refer to Fig. 1.
When the Wind mech. block is completed its winding, the 2nd curtain gear engages with the 2nd curtain hook lever (S128) with remaining the clearance as pointed by the arrow in Fig. 1.
And the Manual lever (S133) is positioned with the 1st curtain hook lever spring (S121).

* Refer to Fig. 2.
When the Shutter is released with the power to the Magnet, the 1st curtain hook lever (S120) is disengaged from the 1st curtian gear.
Consequently, the 1st curtain starts traveling. Also the Manual lever (S133) follows the Release lever (0-S123).
But the 2nd curtain gear has still engaged with the 2nd curtain hook lever.
And it will be free when the power to the Magnet is OFF.

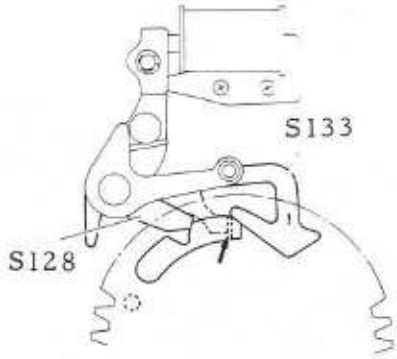


Fig. 1

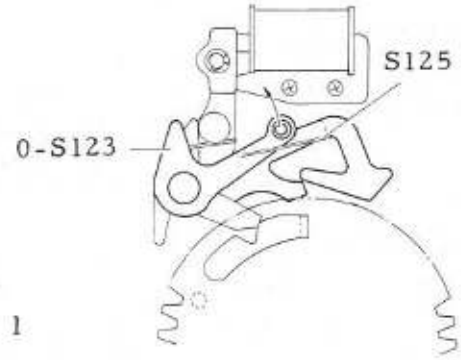


Fig. 2

* Refer to Fig. 3.
Release the Shutter without the power to the Magnet. With raising the Release lever assy. (0-S123), the Armature moves away from the Magnet.
At the same time, the 2nd curtain hook lever is disengaged from the 2nd curtain gear forcedly when the Armature moves away from the Magnet. Also the Manual lever follows the Release lever (0-S123). Consequently, both 1st and 2nd curtain gears start turning. But the 2nd curtain gear catches the Manual lever (S133) before moving away the Manual lever from the 2nd curtain gear as indicated in Fig. 3. Then the 2nd curtain gear is stopped.

* Refer to Fig. 4.
As the 1st curtain gear turns, the 2nd curtain gear is disengaged from the Manual lever when the stud of the 1st curtain gear reaches to the Manual lever to push up as indicated by the arrow. Consequently, the 2nd curtain starts traveling to make the mechanical shutter speed approx. 1/50.

Fig. 3

Fig. 4

* Refer to Fig. 1.
As to attach the Film back to the Body, the Film holder detecting pin B (B16) is pushed and the Connecting lever assy. (0-B150) moves backward.
Therefore, the Counter starting lever (B124) disengages from the Film advance restriction cam gear assy. (0-B137) and the Hook claw B (B116) hooks the Counter cam assy. (0-B104). The Film detecting pin (B6) is also pushed by the Film back and the Hook claw A (B110) hooks the Counter cam assy. (0-B104).

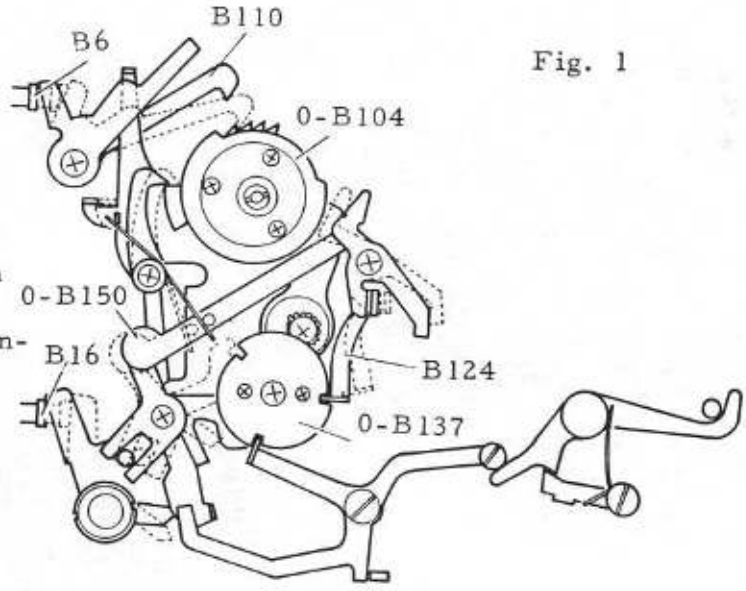


Fig. 1

* Refer to Fig. 2.
The 2nd curtain bounce prevention lever pushes the MD control lever when the shutter is released. At the same time, the MD control lever disengages the Wind actuating lever assy. (0-B159) from the Film advance restriction cam gear assy. (0-B137). Therefore, the Wind completion SW so called SW E is closed. At the same time, the Film winding hold lever (B157) moves toward the Film back and it holds the Wind actuating lever assy. (0-B159). Therefore, the Wind completion SW is remained ON and the Motor keeps turning to wind the paper leader. Also the Counter cam assy. (0-B104) keeps turning.

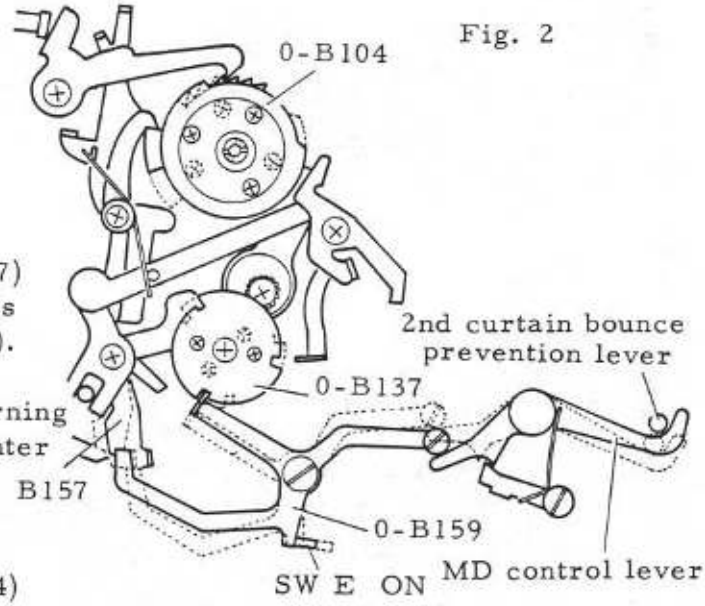


Fig. 2

* Refer to Fig. 3.
Turning the Counter cam assy. (0-B104) drops the 120 lever (B121) into the lower part of 0-B104 as indicated by the arrow. At the same time, the Film winding hold lever (B157) returns to the direction as illustrated by the dot lines and unhook the Wind actuating lever assy. (0-B159) from the Film winding hold lever (B157). Threfore, the Wind actuating lever returns to the original position and its end drops into the Film advance actuating cam gear assy. (0-B137) and the Wind completion SW is opened to stop the Motor.

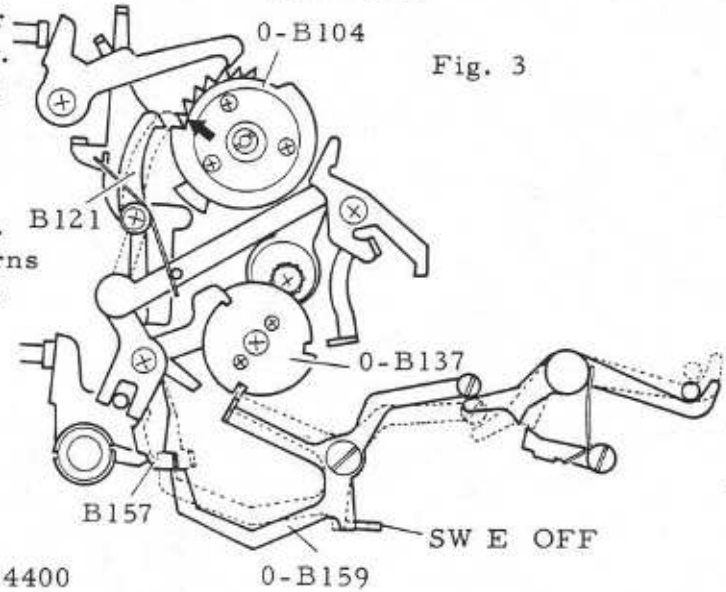


Fig. 3

Winding sequence through the 2nd frame to 15th frame with 120 Film back attached.

The 2nd curtain bounce prevention lever pushes the MD control lever down when the shutter is released. The pushed down the MD control lever disengages the Wind actuating lever (0-B159) from the Film advance restriction cam gear assy. (0-B137), thus the Wind completion SW remains close to wind the tip end of the 0-B159 drops into the cutout of 0-B139 (Wind completion SW becomes OFF). Repeat this function through the 15th frame.

* Refer to Fig. 4.
16th frame with the 120 Film back attached.

When the Counter cam (0-B104) reaches the position as indicated by the arrow, 0-B104 pushes the 120 lever (B121). And the selector 120/220 (Y10) of the Film back holds the 220 lever (0-B118) as shown in Fig. 5 to able to move the Film winding hold lever (B157) to the outside. The Film winding hold lever (B157) holds the Wind actuating lever (0-B159) to remain the Wind completion SW ON to wind the rest of paper. When the Film detecting contacts of the Film back are appered, the Film detecting SW operates to stop winding the film.

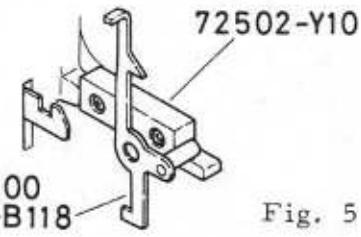


Fig. 5

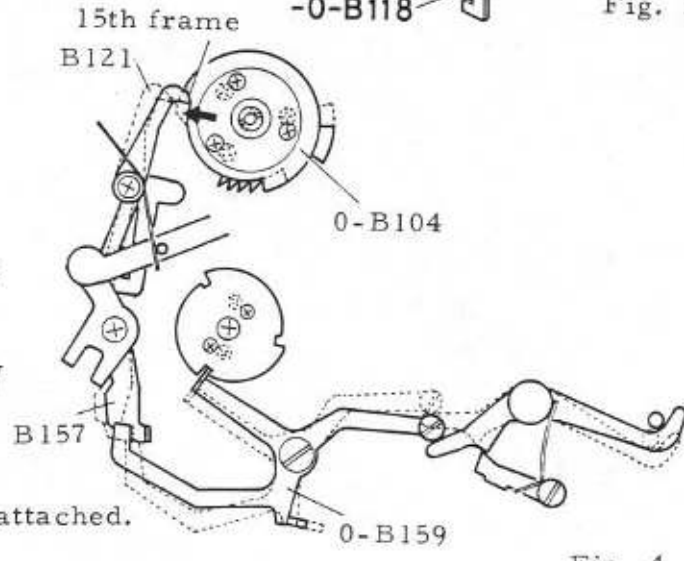


Fig. 4

* Refer to Fig. 6.
16th frame with the 220 Film back attached.

The selector 120/220 of the Film back is installed so that the 220 lever (0-B118) can move backward when the Counter reaches the 1st frame position. Consequently, the Film winding hold lever (B157) cannot move to the outside when the Counter cam reaches the 16th frame position. Therefore, the Wind completion SW remains ON until the Counter cam (0-B104) reaches to the 30th frame position.

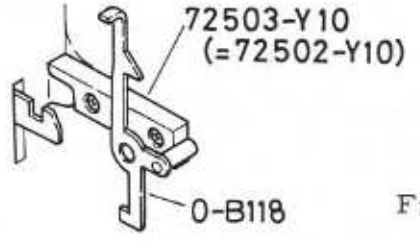


Fig. 6

* Refer to Fig. 7.
31st frame with the 220 Film back attached.

When the Counter cam assy. (0-B104) reaches the position as indicated by the arrow, the cam (0-B104) pushes the 220 lever (0-B118) toward the Film back. At the same time, the Film winding hold lever (B157) holds the Wind actuating lever assy. (0-B159) to remain the Wind completion SW ON. to wind the rest of paper . When the Film detecting contacts of the Film back are appered, the Film detecting SW operates to stop winding the Film.

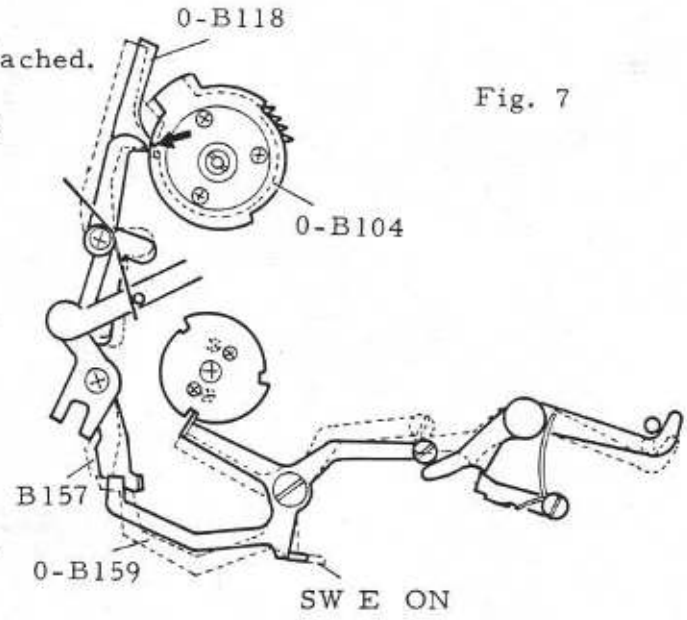


Fig. 7

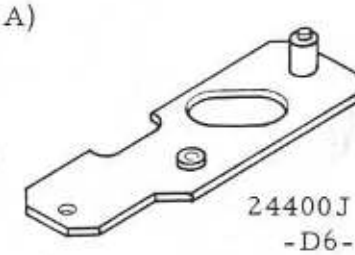
The function of the Counter cam assy. with the 70mm Film back attached.

The 70mm Film back does not push the Hook claw A (B110). Only Hook claw B (B16) hooks the Counter cam assy. (0-B104). Therefore, when the none- teeth part of the Counter cam assy. reaches the Hook claw B (B16), the Counter cam stops turning and it makes possible to wind the film beyond 30th frame.

LIST OF SERVICING TESTERS, JIGS AND TOOLS FOR 24400.

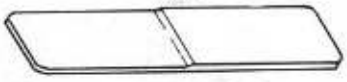
*Exclusively used Testers, Jigs and Tools for servicing 24400.

Order code No.	Name of Tester, Jig and Tool
96734	Shutter Tester 7DF-50 (7DF-50)
96735	Light Receiving Unit for 244 (LRU-244)
96736	Mode Selecting Equipment (MSE-244)
96737	Diaphragm Shutter-Synch Time checking adapter (DSST-244)
96738	FNO Code Checker (FCC-244)
96739	Adapter for TTL-ASL (ATA-244)
96740	Master Lens for EE Check (MLEC-244)
96741	Focus Master Lens for 244 II (ML-244-II)
96742	Master Seat Ring for 244 (MSR-244)
96743	Swing lever Position Gauge (SPG-244)
96744	Winding mech. Block Function Instrument for 244 (WBFI-244)
96745	Optical Axis Adjusting Tester (OAAT-244)
96746	Battery Adapter Grip (BAG-244)
96747	Battery Adapter
96748	Block gauge for 244 (24400N-A01-A)
96749	Mount block for 244 (24400J-A101-A)
96750	Mirror seat installing jig (24400J-A601-A)
96751	C1 assembly stand (24400J-C1-A)
96752	Motor installing flange spacer (24400J-D000-A)
96753	Holding gear (24400J-D3-A)
96754	Idle wheel axis positioning jig (24400J-D6-A)
96755	Curtain installing jig (24400J-E000-A-2)

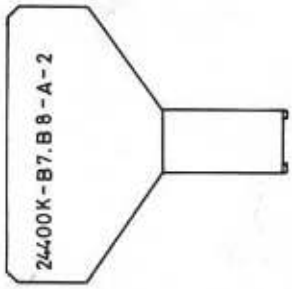


24400J
-D6-A

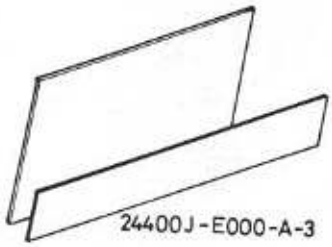
96756	E000 installing jig (24400J-E000-A-3)
96757	Thickness gauge for shutter curtain (24400N-E35-A)
96758	Mirror angle 47° jig (24400N-L1-A)
96759	Dial Gauge Bit for 244 (DGB-244)
96760	24400K-A87, A88-A
96761	24400K-A130-A
96762	24400K-B7, B8-A
96763	24400K-B7, B8-A-2
96764	24400K-B11-A
96765	24400K-B117-A
96766	24400K-C25-A
96767	24400K-C99-A
96768	24400K-C156-A
96769	24400K-E7-A
96770	24400K-E13-A
96771	24400K-S119-A
96772	Hexagon Driver (HD-M2)
96778	RL-QS Checker for 244 (RLC-244)



24400N-E35-A



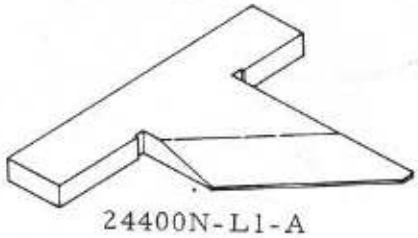
24400K-B11-A



24400J-E000-A-3

Other Testers, Jigs and Tools.

96335	Shutter Tester 7PE-25A3 (7PE-25A3)
93300	Dial gauge comparator (PH-2)
93280	1000 mm Collimator
	Regulated DC power supply
	Oscilloscope
	Digital multi meter TR-6355 or TR-6354
96110	23400K-A33
96119	23400K-B83-A
	Dial tension gauge DT-300



24400N-L1-A

Parts No.	Description	Quantity	Interchangeability
B158	Hold lever spring	1	
0-B159	Wind actuating lever assy. (B159, B160)	1	
B162	Set adjusting lever spring	1	
0-B163	Release lever B assy. (B163, B126)	1	
B165	Release lever B collar	1	
B166	Release lever B spring	1	
B172	Wind actuating lever collar	1	
B173	Wind actuating lever retainer screw	1	
B174	Release lever C spring	1	
B176	Hold lever collar	1	
B178	Cam charge sector gear	1	
B179	Washer	1	
0-B201	Film winding seat assy. (B201, B205, B214, B218, B225, B227, B233, B234 x2, B235)	1	
B202	Film winding gear	1	
B203	Friction gear	1	
B204	Friction ratchet wheel	1	
B208	Friction spring	1	
0-B209	Wind completion lever assy. (B209, B229, B230)	1	
B210	Plate spring collar	1	
B211	Plate spring	1	
B212	Latch lever collar	1	

Parts No.	Description	Quantity	Interchangeability
B213	Latch lever	1	
B215	Coupling spring	1	
B216-00A -00B	Adjusting cam A (D=3) " B (D=3.2)		
0-B217	Multi-exposure lever assy. (B217, B220)	1	
B219	Multi-exposure lever spring	1	
B221	Multi-exposure ring	1	
B222	Multi-exposure ring retainer screw	1	
B223	Multi-exposure indication plate	1	
B226	Multi-exposure hook lever	1	
B228	Multi-exposure hook lever spring	1	
B231	Multi-exposure releasing lever spring	1	
B232	Wind completion lever spring	1	
B236	Cocked indication marker	1	
B237	Film winding seat retainer screw	2	
0-B239	Release lever assy. (B239, B240)	1	
B241	Retaining washer	1	
B242	Multi-exposure change lever	1	
B243	Multi-exposure change lever collar	1	
B244	Multi-exposure change lever spring	1	
B245	Film winding gear retainer screw	1	
0-C1	Winding seat assy. (C1, C9 x2, C31, C43, C61, C77, C91 x2, C92, C95 x2, C114, C136, C144)	1	
C2	1st winding gear	1	